Telephone Engineer

THE INTERNATIONAL TECHNICAL JOURNAL

COMPLETE REPORT ON COMMUNICATION COMPANIES ON PAGE 14

ALSO SEE PAGE 9

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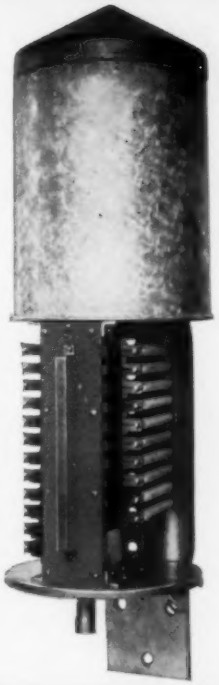

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February 1934

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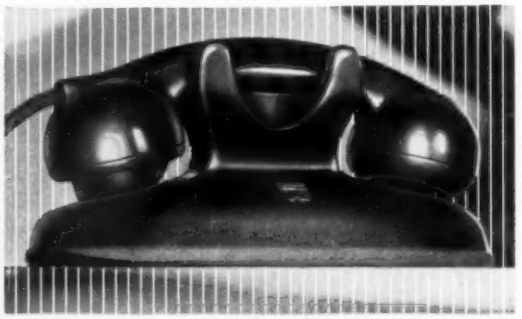

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Telephone Engineer

The International Technical Journal

Founded in 1909

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ENTERED AS SECOND-CLASS MATTER, AT THE POST OFFICE AT MORTON, ILLINOIS, UNDER THE ACT OF MARCH 3, 1879.

You Can't Afford To Miss Them

We begin in this issue one of the most practical and worthwhile articles it has been our pleasure to publish. It discusses cable splicing and is written by Ray Blain, that popular telephone authority.

This month's installment deals with the importance of selecting quality solder of the right proportion of tin and lead, heating of the solder to the correct temperature for wiping and stirring and the importance of having the best of solder pots. Managers and cablemen DON'T MISS IT.

Soon we will begin a series of articles on telephone traffic subjects, written by leading traffic experts in our industry. It has taken months to arrange for this series and judging by some of the articles they are going to pay big dividends to traffic men, and, as far as that is concerned, to all telephone men. Be sure that you are getting regular copies of TELEPHONE ENGINEER sent to you direct so you won't miss any of these articles.

R. C. R.

SHOWING BOYS AND GIRLS HOW

GOES DOWN TO THE SEA IN

Telephone advertising in the juvenile magazines is keyed to the adventurous, romantic character of the editorial pages. It tells of the wonder of telephone service—reaching out to ships at sea, conquering swamps, crossing deserts. It tells true stories of courageous, quick-witted telephone people in all manner of emergencies. A representative 1934 advertisement appears on the opposite page. This, and other advertisements like it, should stir youthful imaginations and develop a lasting appreciation of the telephone —to the benefit of telephone companies everywhere.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTE

What's Your Decision?

TELEPHONE ENGINEER has sensed the opportunity that exists for those companies that have the means to buy telephones, switchboards, line supplies and other apparatus requirements, and for several months we have strongly advocated the "Buy Now" movement. This has not been done solely in the interest of advertisers of manufactured goods, or because it sounded like good editorial material.

The basis for TELEPHONE ENGINEER's decision to recommend to operating companies that they make their purchases now, at present prices, can best be understood by considering a few pertinent and timely facts. When the meaning of those facts are known, you will readily see that the "Buy Now" movement is advocated mainly in the interest of the operating company.

Consider the reason why manufacturers find it absolutely impossible to furnish printed price lists at this time. If you have had an occasion to request such a list from any of the manufacturers, you know that no up-to-date list exists, and that it is doubtful if an up-to-date price list will be available at any time this year.

What has brought about the conditions which preclude the possibility of furnishing an accurate list of today's prices? The answer rests with our Federal Administration, and the policies that the President is establishing in order to speed the return to normal business.

Manufacturers have to contend with increases in labor costs due to operation under the NRA. Then they are faced with increases in material costs which are due to increased labor costs. In the case of cotton, an additional 10 per cent process tax is injected.

This means that from time to time prices will be increased or adjusted. Manufacturers are required to make studies of costs of commodities going into the manufacture of every item, and every time they go up, prices of telephone equipment must go up.

On top of all of this there is the devaluation of the dollar, which will mean a natural rise in prices of all commodities.

Suppliers also are operating under various codes. Few prices have as yet been filed with their supervisory bodies. When prices are filed, there no doubt will be adjustments. After prices are filed, such prices doubtlessly will be raised from time to time as the economic condition changes.

In view of the above facts, TELEPHONE ENGINEER still maintains that operating companies should give their most serious consideration to buying needed telephones, equipment and spring construction material NOW. To do so is simply a matter of good business judgment.

R. C. Reno

EDITOR

The Telephone Business As We See It

Communications Legislation Is Postponed

As we stated last month, we do not believe that the reported plan of federal control of or monopoly in the communications systems of the United States gives the telephone industry much worry at present.

The report of the study of communications by an interdepartmental committee submitted to the Interstate Commerce Committee by the President, published on page 14 of this issue, shows that there are many conflicting opinions in Washington and that it will be some time before the project is up for final action. Also it is reported that the President, who, it is felt, will have final say in the matter, has decided upon postponement of legislation on the proposed communications bill. The report shows that there is a tendency to continue private control of communication enterprises and, in fact, it discusses favorably the benefits of competition in the telegraph service.

▲ ▲ ▲

An Old Question Bobs Up Again

From all quarters we hear telephone companies complaining about the effects of CWA activities in the work of improving and widening highways. This work means that when highways are widened telephone companies are forced to move telephone lines which, in a great many cases, mean great expenditures for labor. This brings up the old and much discussed subject of the right of telephone companies to expect and demand reimbursements for expenditures made for moving pole lines when the moving is ordered by state or federal governments.

As we understand it, first this is a problem for state governments and telephone companies to solve. Probably agitation for legislation providing for complete reimbursement of expenditures for this work by telephone men in various states would result in enactment of such laws and then the step to similar federal legislation would be much shorter.

Here is a serious problem for state telephone associations and their members to consider. It might be well for them to ask themselves, "What is the situation in our state." "What is the trend in our state legislature relative to this type of legislation?" "What have we done to secure protection in this respect?" "How much is the CWA highway work and other government work costing telephone companies in our state?" "Then—What are we going to do to bring about protection legislation?"

While we can see that work of this nature means new business for pole companies because there are many poles now in service that are in no condition to be moved and would have to be replaced, we believe legislation providing reimbursement to telephone companies of expenditures made in moving pole lines would not decrease this market, but instead, it probably would increase it as every questionable pole would be replaced.

Telephone men should not waste any time in making plans to get this consideration from their state legislatures.

▲ ▲ ▲

Telling The Ohio Tax Boosters

In an editorial in *Ohio Telephone News*, the Ohio Independent Telephone Association certainly gives Ohio legislators something to think about before placing increased taxation on telephone companies of that state. Utilities are now paying their just share of taxes and it behooves every telephone man to join in any movement against increased taxation. The Ohio News editorial tells the story when it says:

"During the next few months this Grand Old Buckeye Commonwealth is going to attempt to raise an additional $50,000,000 or so in new taxes to replace the loss sustained as a result of the adoption of the ten mill levy by vote of the people. . . . . .

"Without doubt, all utilities companies including telephone companies, will come in for some rough handling by the socialistic press and by interests who are themselves seeking to escape taxation.

"As usual the tax consuming divisions will stand on the side lines like so many hungry lions, yowling for cash, and little caring whether their meat consists of raw beef or a new born baby.

"It becomes necessary for us to record that the telephone industry concludes its operations for 1933 in a skinny and unkempt condition. Station and revenue figures are away off from those of previous years. Dividend payments have either vanished entirely, or been slashed to a tiny fraction of normal. Expenses have been hacked mercilessly to the accompaniment of groans from employees and stockholders. The thousand or more Independent exchanges are a bit dreary and show signs of neglect.

"It's an open question whether a single Ohio operating telephone company cleared a dollar in real profit during 1932 or 1933. Formal reports and bookkeeping entries are not sufficiently pessimistic to tell the whole story. There's evidence to show that every telephone plant in the state ended 1933 in poorer condition than it began the year, and with a tremendous amount of maintenance and replacement work to be done as soon as it can be handled.

"Considering the performance by our industry, as borne out by sworn reports to the P. U. C. O. and I. C. C., that are now in the hopper, it would appear sheer idiocy for the state to pile new taxes upon the mountainous total now being paid by these properties for the privilege of remaining in business.

The Ohio Association has gone into this thing in a systematic and energetic way and other state associations can do well to follow in its footsteps.

GOOD CABLE SPLICING PAYS BIG DIVIDENDS

By
RAY BLAIN
A. I. E. E.

THE wiping of joints in lead covered cables has ever been considered a most difficult task and one which requires the services of a specialist, well trained in the art of cable splicing. In the old days all cable splicers expected a certain percentage of their splices to develop trouble and they were generally at a loss to explain just what caused the trouble. Many splices, perfect in appearance, would develop trouble though they were all made in exactly the same manner, some were good while others went bad. Even at the present time many splicers don't consider it a serious matter when a splice goes bad, though if modern tools and materials are used and proper tests made, rarely does a splice fail because of workmanship.

Cable trouble in the old days, though by no means welcome was not as seriously considered as it generally is today. Cables of larger sizes are now in common use and when a splice fails more lines are affected and no telephone company can well afford to have frequent interruptions of service in this age of speed and general efficiency.

Training of Cable Splicers

It has been a mystery to most people as to just why the splicing of lead cable should be so difficult and why so many try to be successful cable splicers and fail. It is quite true that most any good lineman or installer can without difficulty splice the conductors together but generally when attempting to wipe the joint between the lead sleeve and the cable sheath gets into grave difficulties. Others will wipe a good looking joint only to have it get wet during the first rain and then they wonder just what caused their trouble.

I have known men who made good cable splicers after three months of intensive training and I have known others who could not wipe a good joint after years of trying. I know one man who had an excellent record in the splicers school and then failed miserably when given a set of tools and sent out on the job. Splicing schools of today have corrected this fault to a great extent as they make an effort to stimulate conditions in the school that the student will find when he goes out on the job. A man may be able to splice a cable on the floor propped up by two boxes and then be at a total loss as to how to proceed on the same splice if it is transferred to a high pole in a strong wind. There is no good reason why any careful workman, trained properly and adequately and equipped with tools and material cannot make a cable splicer because this trade surely does not demand a superman though a splicer with a few or no failures on his record does generally rank as such with a progressive telephone company.

Many who fail frequently in the wiping of lead joints might succeed were they properly equipped with suitable tools and material and then given some simple instruction as to the correct method to follow. The main object of this article is to indicate the kind of material and tools required and state the methods most commonly used by present day successful cable splicers who have learned by experience and profited by their mistakes. If in doing this, we save a few joints from going bad then we shall feel that our efforts have not been in vain.

Mr. Blain testing temperature of wiping solder with Dillon Temperometer.

Selection of Wiping Solder

The first thing to consider, and we believe one of the most important in lead cable splicing, is the selection of wiping solder. Standard wiping solder generally consists of 40 per cent tin and 60 per cent lead and is referred to as 40/60. Some prefer to use solder with 38 per cent tin and 62 per cent lead which has also proved entirely satisfactory.

Engineers have learned from extensive tests that when solder, not of this proper mixture of tin and lead is used that cable joints will not withstand a 20-pound gas pressure test, regardless of how careful the joint is wiped and consequently will not make a serviceable joint. Splices wiped with solder not of the correct lead and tin consistency will soon become crystalized or porous and a wet joint will result.

Solder manufactured by a reliable concern and bearing the stamp 40/60 or 38/62 should always be used as it doesn't pay to take chances with doubtful solder. Solder which contains less than about 38 per cent tin is referred to as "coarse" and may be identified by its dull, white, or chalky appearance. Even the best of wiping solder may be ruined by throwing pieces of cable sheath into the pot as the sheath contains substances which are not required in solder and will practically ruin it.

Heating to Correct Temperature

To wipe a joint properly and make sure that it does not develop trouble later, solder must be heated to the exact temperature and when so heated it is thin and pours readily. Proper equipment should be procured for the heating and handling of the molten solder as much time is lost and harm often caused in an attempt to utilize makeshifts.

A good fire pot or furnace is an absolute necessity and there are many good ones on the market which may be obtained at a reasonable cost. The furnace should be equipped with a suitable windshield if it is to be used out in the open. Such a shield may be purchased cheaply or one may be improvised from an old model "T" Ford hood which will be found satisfactory. Frequently the

mistake is made of using a metal pot which is too small and consequently cools off quickly when removed from the fire.

The preferable size for a metal pot is about eight inches in diameter which holds an ample supply of solder and will retain an even temperature for a considerable time. Another advantage of this large size metal pot is that it is possible to wipe both ends of a splice in small or medium sized cables with one heating. A good ladle should be procured and while most splicers prefer one with a wooden handle the iron handles will generally be found satisfactory providing they are insulated from heat by several layers of friction tape.

Scientific Heating Needed

Most cable splicers employ their own pet schemes to determine the proper temperature of wiping metal and practically all of them are amazingly inaccurate, when compared with a scientific method. Many old splicers claim that they can determine when a pot of metal has reached the correct temperature by visual inspection. The color of the surface of the molten solder first takes on a yellowish hue which changes to blue and then as the heating progresses finally turns to gray when it is supposed to be the correct temperature for wiping. While a close observer with a good eye for color might be fairly accurate, a small part of the time when heating metal out in the open on a good clear day, I fear that he would make some glaring mistakes on dark, foggy or rainy days or in dark buildings or alleys and when working nights.

These mistakes generally mean wet joints later and expensive repair jobs for the company. The sense of sight is a wonderful thing and we should all prize it highly, but I fear that many old splicers overestimate their ability when they claim that they can determine the temperature of metal by its color under all lighting conditions. No, even though they had the eyes of an owl and twice his wisdom I don't believe they could do it with a degree of accuracy worth even a passing consideration.

Using Temperometer to test temperature of wiping solder on windy day. Note windshield protecting furnace.

Convention Schedule

Nebraska Telephone Association, Hotel Paxton, Omaha, February 13 and 14.

Iowa Independent Telephone Association, Hotel Fort Des Moines, Des Moines, February 21 and 22.

Oklahoma Utilities Association, Hotel Mayo, Tulsa, March 6 and 7.

Texas Telephone Association, March 13 and 14.

Ohio Independent Telephone Association, Hotel Deshler-Wallick, Columbus, April 17 and 18.

Another folly and a method commonly used by splicers to determine the temperature of their metal is to dip a piece of dry paper into the hot metal and if it happens to be near the correct temperature the paper is supposed to turn a dark brown. If the paper burns easily it is an indication that the solder is too hot for wiping. This paper test is often misleading because the fact that a thick paper will stand more heat without turning brown or burning than will a thin one. The presence of moisture no matter how slight also ruins the accuracy of this test. Different kinds and grades of paper likewise give different reactions and everything considered this method of testing is also practically worthless.

New Temperature Tester

A mechanical device has recently been placed on the market which can be used to determine quickly and accurately the temperature of wiping metal (Dillon's Temperometer). This instrument sells at a reasonable cost and may be used to advantage by anyone doing lead cable work.

The simple mechanism of the Dillon Temperometer is contained in a metal tube 10 inches in length and one and one-fourth inches in diameter. This instrument is so constructed that it may be tossed into a tool kit with the regular tools of the splicer without the slightest danger of it being damaged as it has no glass or other delicate parts and is built to withstand the rough use given to ordinary cableman's tools. Even the indicating pointer is inclosed, safe from injury. It has even been dropped from cableman's platforms and into manholes without effecting its accuracy in the slightest.

When testing the temperature of wiping solder, insert the Temperometer in the metal after it has melted, but before stirring with a ladle. The Temperometer should be dipped into the solder two or more times when each test is made and then held until the indicator registers. It is not necessary to leave the instrument in the metal so long that the upper end is heated to the extent that it is uncomfortable to hold in the bare hand. When the instrument is left in the metal a short time, the temperature indicator, which normally is out of sight, will turn and register on the dial.

Indicator Accurate

Solder may be used to wipe a joint when its temperature registers as high as point 4, and as low as point 3 on the Temperometer dial. The preferable temperature however for general work is when the indicator registers at a point midway between 3 and 4. A Splicer should never start to wipe a joint with solder which registers below point 3 on the dial.

Solder to be used in wiping joints on large light and power cables should be heated to point 4½ on the Temperometer dial and the wiping should not be started with solder that registers below 4 on the dial. Solder used on split sleeves to seal the seam should be 50 per cent tin and 50 per cent lead and should be heated until the pointer registers 4¾ on the dial. In factory calibration and sometimes in use the Temperometer may accumulate particles of solder which harden and remain in the instrument causing a rattling effect. These particles cause no trouble as they will melt when the instrument is again inserted in hot solder.

When a Temperometer is jolted or struck sharply a slight humming noise

(*Please turn to page* 34)

Tools and supplies that make up cableman's kit, including Temperometer.

COMMUNICATIONS REPORT TO COMMERCE COMMITTEE

THE Committee on Interstate Commerce has made public the report of the study made by an interdepartmental committee regarding legislation subjecting the nation's communications systems to regulation by the federal government. The House Interstate Commerce Committee announced January 27 that it is now working on legislation of this kind.

The report was transmitted to the Interstate Commerce Committee by a letter from President Roosevelt to Chairman Clarence C. Dill, in which he says:

"Sometime ago I directed the Secretary of Commerce to organize an interdepartmental committee to make a study for me of the entire communication situation.

"Such a committee was organized and has labored for several weeks in covering this important field. The result of their study is found in the report attached hereto. It is transmitted to you in the hope that it may be of assistance to you and your associates on the committee in your further study of the subject and in the construction of the needed legislation. I shall be glad to discuss this report with the committee members at the proper time."

The interdepartmental committee recommends that ownership of communications enterprises continue in private control for the time being and favorably discusses the advantages of competition in the communications field. The report shows that there is a difference of opinions of the members of the committee.

The provisions of the report, which was sent to President Roosevelt by Secretary of Commerce Roper follows:

A Study of Communications by an Interdepartmental Committee

There is submitted herewith the results of a study by an interdepartmental committee which, at your request, I set up from various departments of the Government. This committee was composed of: Secretary of Commerce, chairman; Gen. C. McK. Saltzman, vice chairman; Irving J. Carr, Chief Signal Officer of the United States Army; J. H. Del'inger, Chief of Radio Section, Bureau of Standards; Capt. S. C. Hooper, Director of Naval Communications; Herbert L. Pettey, Secretary of the Federal Radio Commission; Irvin Stewart, Department of State, and E. M. Webster, lieutenant commander of the United States Coast Guard.

There were also associated with the committee, in an advisory capacity: Hon. Clarence C. Dill, chairman of the Interstate Commerce Committee of the Senate; Hon. Sam Rayburn, chairman of the Interstate and Foreign Commerce Committee of the House of Representatives; and W. M. W. Splawn, special counsel to the Committee on Interstate and Foreign Commerce.

The study, first, briefly outlines the types of electrical communication agencies in the United States, and names the most important corporations in control.

The commercial communication service can be conveniently considered in three classes: (*a*) Two-way telegraphy, (*b*) two-way telephony, (*c*) broadcasting. The committee has considered the status of commercial communication broadly and finds the problems of the three classes to be very different. The studies made indicate that notwithstanding these differences certain uniform conclusions can be reached. Perhaps the major conclusion is the need of effective governmental regulation of the interstate and foreign aspects of commercial communication. It is in the field of two-way telegraphy that existing problems are most acute. The problems of (*c*), broadcasting, are not considered in this study.

There are four major communication organizations in the United States:

(*a*) The American Telephone & Telegraph company and its associated companies with almost a monopoly in the domestic telephone service, operating 13,793,000 telephones. These companies own an immense wire system covering the United States primarily used for telephone purposes, but which includes surplus wires and circuits which can be and are to some extent leased for other purposes including telegraphy. This company operates (an international) radiotelephone stations which communicate with radiotelephone stations in many foreign countries and through these to nearly all foreign countries. The telephone service of the American Telephone & Telegraph company and its associated "Bell" companies reach many localities not having telegraph offices. It is a purely American company, although it owns about 30 per cent of the capital stock of the Bell Telephone company of Canada.

(*b*) The Western Union Telegraph company engaged in telegraph and cable communication service operating approximately 23,000 telegraph offices in this country. The Western Union also operates a cable service to the West Indies, Europe, and in conjunction with a British company to South America. It is primarily an American company.

(*c*) The International Telephone & Telegraph corporation operating through subsidiaries a domestic telegraph service, a domestic radio service, a marine radio service, a cable service to Europe, the West Indies, South America, and the Orient, and a radio service to the West Indies, South America, Europe, and the Orient. This company also operates telephone services in foreign countries through subsidiaries and extensive manufacturing companies in the United States and abroad. This company has a number of subsidiary companies, among which are:

(1) The Postal Telegraph company competing with the Western Union. The Postal operates a comparatively small system of about 2,800 offices, located principally in the larger cities, which also are served by the Western Union.

(2) Mackay Radio Telegraph Co., operating a rapidly expanding domestic radiotelegraph company with 7 stations built or building, a marine radio service with 8 stations on both coasts of the United States, and 13 overseas radio circuits to Europe, the West Indies, South America, and Asia.

(3) Commercial Pacific Cable company, operating a cable from San Francisco to Shanghai via Honolulu, Midway, Guam, and Manila.

(4) All American Cables with an extensive network from New York to Central America, the West Indies, and South America.

(5) Commercial Cable company operating six trans-Atlantic cables from New York.

(6) Thirty-one manufacturing companies in Norway, Belgium, Shanghai, France, Argentina, England, Germany, Japan, Australia, Denmark, Spain, Italy, Rumania, Czechoslovakia, Austria, Po-

land, and two in the United States.

(7) Nineteen radiote'egraph and telephone companies in Brazil, Argentina, Chile, Spain, Cuba, Peru, Mexico, Uruguay, Puerto Rico, China, and Rumania.

It is primarily an international company, the principal ownership and management of which is American. Its principal business is in countries other than the United States, and it is on those foreign companies, officered and operated by foreigners, that it now must look for support to combat the mounting deficits incurred in recent years by its United States subsidiaries.

(*d*) The Radio Corporation of America engaged in radiotelegraph and radiotelephone communication service. Its principal communication subsidiaries are:

(1) RCA Communications, Inc., providing 40 circuits to the West Indies, South America, Europe, Asia, and Africa.

(2) Radio Marine Corporation operating 12 marine radio service stations, providing ship-shore and ship-ship traffic.

(3) National Broadcasting company, operating a chain radio broadcast system.

(4) Two manufacturing companies in the United States.

In addition to those four major organizations, there are a large number of Independent telephone companies, lines and associations, operating over 4,000,000 telephones, but which handle a sma'l percentage of the telephone service of the country.

There are several smaller radio companies engaged in telegraphy, among which are:

(*a*) The Globe Wireless company, a subsidiary of Robert Dollar Steamship company, providing service between the west coast of the United States across the Pacific to Hawaii, Guam, and Asia, and to ships, and between cities on the United States Pacific coast.

(*b*) The Americal Radio News Corporation engaged in the transmission of press traffic with stations in New York, Chicago, Denver, San Francisco, Atlanta, and Cuba.

(*c*) The Press Wireless company engaged in the transmission of press traffic between stations in the United States, South America, Mexico, Canada, Hawaii, and Denmark.

(*d*) The Tropical Radio Telegraph company, a subsidiary of the United Fruit company, with a commercial service between certain points within the United States and between certain points in the United States and Central American countries.

(*e*) Other small domestic radio companies are:

(1) Central Radio. Te'egraph company.
(2) Michigan Wireless Telegraph company.
(3) Wabash Radio corporation.
(4) Pere Marquette Radio corporation.
(5) Western Radio Telegraph company.

(*f*) The Government operates the following communication systems:

Under the Commerce Department, a radiotelegraph system for the airways division and marine beacons for the Lighthouse Service.

Under the Treasury Department, a system of radiotelegraph stations on both coasts of the United States for the Coast Guard for communication with their ships and for purposes of safety of life at sea.

Under the Department of the Interior, a radiotelegraph service for the Forestry section (one of several small services).

Under the Navy Department, a radiotelegraph system of communication between both coasts, between the naval districts, on both coasts to ships at sea (including radio direction-finder stations), and to Hawaii, Alaska, Manila, Panama, Puerto Rico, Guam, and Samoa.

Under the War Department, a cable and radio service to Alaska, a radio and wire te'egraph network within the United States and Alaska, and a radiotelegraph service to its overseas units and transports.

(*g*) Several commercial aviation communication systems operating radiotelegraph and radiotelephone service between their landing fields and between the landing fields and their planes.

This brief outline shows an interesting picture of a collection of communication agencies not working in accordance with any national plan. In the commercial field each company is a good one, but in the telegraph field each lacks certain facilities to render the greatest efficiency. The Radio corporation, for example, is seriously handicapped through lack of system of offices throughout the country to serve as feeders for its international radio service. Consequently, it has a contract with the Western Union for pick-up and delivery service, domestically. Both the Western Union and Postal operating the domestic telegraph offices throughout the country own and operate cables to Europe. They naturally prefer to send messages originating in the interior via their own cables in preference to turning them over to the Radio corporation for transmission by radio. (However, should the Radio corporation establish a system of domestic offices and handle domestic service between United States cities, it wou'd make such inroads into the revenues of the Western Union as to compel that company to close the unproductive stations in the small towns and villages now maintained out of the profits of the Western Union made in the larger cities.) One member believes that the Radio Corporation of America or any other independent radio company would hesitate to enter the domestic field against two such competitors as Western Union and Postal Telegraph-Cable company under present conditions. However, if Western Union and Postal Telegraph should merge, he feels that it would be necessary to permit a radiote'egraph company to enter the domestic field in order to preserve for the public the benefits of the cheaper rates and better service which competition engenders, in addition to furnishing more direct international communication. There already exists quite an extensive, though not unified, intercity radio service.

If these various radio companies were permitted to, and would combine, this merger would furnish competition to a unified domestic wire telegraph company which the other members seem to favor. The merged wire companies would have little to fear from a merger of radiotelegraph companies for many years, but the public would benefit by reduced rates, better and more direct service in the meantime. Research and development in the ultrashort wave field would be required to deve'op pick-up and delivery service and this would undoubtedly be reflected in the rapid advancement of all phases of the radio art. In nations of great area such as Brazil, Russia, and China, which could not afford landline structures like the more compact nations, radio is already being applied to connect large cities because of low costs of installation and operation, great'y to the public advantage. After radio has been developed and its application determined, consideration should be given to the advisability of unifying it with wires and cables. Not now. And when it has finally demonstrated its possibilities, the attitude toward it may have changed considerably. Because of the wise provision of Congress the cable companies were not permitted to engage in radiotelegraphy in the international field and rapid expansion of our international radio service followed. The same protection should be afforded radio in the domestic fie'd.

The subsidiaries of the International Telegraph & Telephone corporation with a domestic telegraph and international radio and cable service across

both the Atlantic and Pacific are handicapped by having a relatively small number of domestic offices to feed their international services.

The Western Union has a large number of domestic offices and a trans-Atlantic cable service. It has no radio facilities whatever and no cable facilities on the Pacific.

One member points out that in the foreign field, our numerous United States communication companies are at a disadvantage in their competition with foreign companies. The external communications of practically every large country in the world are either private monopolies under Government control or are owned or operated by the Government itself. Our numerous companies, competing against each other and against foreign monopolies are played off, one against the other, by the foreign monopolies, are forced into positions whereby they are compelled, to save themselves, to make contracts advantageous to the foreign monopolies and disadvantageous to themselves.

Second. There are set out some arguments for and against Government ownership of communication companies, stating the conclusion of the committee that communication companies and their holding companies, at least for the present, should be privately owned and operated. In this connection, one member of the committee emphasizes that the law should be clarified to prevent control by foreigners of holding companies investing in American communication companies.

The contents of this section apply to communication companies engaged in international communications as well as those in domestic service.

Government ownership. — The proponents of Government ownership believe that such a national policy will result in—

1. Lower tolls due to (*a*) the elimination of the present communication company profits and excessive overhead costs; (*b*) the elimination of large "accounting" costs through the use of the postage stamp in prepaying telegrams; (*c*) the saving on interest charges upon borrowed funds.
2. Better service by the consolidation of the telegraph and telephone, both wire and radio services.
3. The prevention of discriminatory services.
4. The prevention of speculative management.
5. The extension of service to the localities not now served.
6. The ability to present a united front to foreign systems.

The opponents of Government ownership hold that such a national policy is objectionable due to:

1. The danger of political domination and interference.
2. Government "red tape."
3. The charge that the Government does not conduct its business economically.
4. The conjecture that Government ownership would discourage initiative, technical research, and advancement.
5. The belief that the communication service under Government ownership in foreign countries is inferior to ours under private ownership.
6. The belief that the people do not want Government ownership.

The committee believes that communication companies and their holding companies should be privately owned and operated, at least for the present. One member of the committee believes that this conclusion is sound as far as it goes, but does not consider that it is sufficiently explicit to be adopted as a policy by this country. For instance, such a policy could permit foreign domination of all our United States communication companies, a condition which would be unthinkable for reasons of commerce, foreign relations, and national defense. In 1927 when the Radio Act was made law, Congress was alive to this possibility and went to great length in section 12 of that act to prevent foreign influence from entering our communication system. They were unsuccessful, to some extent, as a loophole in the law permits a foreign-dominated holding company to own United States communication companies. This flaw in the law has already been utilized for that very purpose, and the one member strongly advises that now is the time to remedy the defect. He is of the opinion that all the communication companies of the United States and its possessions and their holding companies should be privately owned by American stockholders, operated and controlled by American directors, officials, and personnel. To this end, that member of the committee believes the provisions of section 12 of the Radio Act of 1927 should be amended and strengthened in order that the intent of the provisions of this section may not be evaded by setting up holding companies with foreign directors or influenced by foreign stockholders, which holding companies now may control United States communication companies under the provision of this section, although not so intended by the framers of the law. He believes that the law should go still further and prohibit any United States communication company from owning commercial facilities in foreign countries, unless provided for by treaty.

Third, under the heading "Regulation," the committee recommends the transfer of existing diversified regulation of communications to a new or single regulatory body, to which would be committed any further Federal control of two-way communication and broadcasting.

Although the cable, telegraph, telephone, and radio are inextricably intertwined in communication, the Federal regulation of these agencies, in our country, is not centered in one governmental body. The responsibility for regulation is scattered. The scattering of the regulatory power of the Government has not been in the interest of the most economical or efficient service. (In this connection, the following is quoted from the report of the standing committee on communications of the American Bar Association adopted at the annual meeting Aug. 30—Sept. 1, 1932:)

In this connection it should be borne in mind that there is now no Government agency authorized to deal with communication problems as such. The Interstate Commerce Commission has certain jurisdiction over the rates and charges of both wire and wireless companies engaged as common carriers in transmitting messages for hire in interstate and foreign commerce (49 U. S. C.A.L.). The executive branch of the Government has jurisdiction over the granting of licenses for the landing of commercial cables (47 U.S.C.A., 34—19) * * *. The Federal Radio Commission has authority to license and to regulate the operation but not the rates and charges of wireless communication agencies engaged in interstate and foreign commerce (47 U.S.C.A. 81—119). That the communication problem is worthy of serious consideration by Congress and those in authority cannot be doubted. Division of authority over subject matter not readily susceptible of division has continued too long. Communication problems are communication problems whether the agency employed be telephone or telegraph, wire or wireless. All communication systems of any magnitude own and operate or by arrangement use facilities of both types. The reasons are readily apparent. * * *

We submit that it is hardly consistent with economy or maximum efficiency to have the regulation of wireless-communication agencies under one body and such relation of wire-communication agencies as exists under another, while the question of rates for such service, frequently involving both types of facilities, are largely governed by the conditions of competition prevailing at a particular time and place. The situation created thereby is not only contrary to the public interest, but is contrary to the interests of the communication companies themselves.

In addition to the regulatory powers over communication exercised by different agencies of the Government mentioned above, the committee also finds that certain rate-making powers are vested in the Postmaster General by virtue of section 3, title 47, United States Code.

The most far-reaching regulatory power over rates and practices of telegraph, telephone, cable, and radio companies is vested in the Interstate Commerce Commission. This important body already burdened with its great

responsibilities on railroad regulation has never been very active in the regulation of communication agencies. The activities of the Commission in connection with communication were the subject of review in hearings held by the Senate Committee on Interstate Commerce in the second session of the Seventy-first Congress, the Honorable Joseph B. Eastman appearing for the Commission. The testimony showed that the Commission had no departments, bureaus, or divisions that dealt exclusively with radio, telephone, telegraph, or cable matters (p. 1566), that few such cases had ever been heard by the Commission, and that there were no employees in any of the departments or bureaus who dealt exclusively with communication matters, with the exception of one clerk and certain engineers (p. 1575). The testimony indicated that the regulation of communication agencies was a minor activity of the Commission. Commissioner Eastman testified, "in my opinion—and I think this opinion is shared by other members of the Commission—the telephone, telegraph, and cable are more closely connected with radio than with railroads. And while I have given no great amount of study to the question, I am inclined to believe that the supervision of communication companies by one commission would be preferable to the present method of divided control."

The committee realizes that the communication traffic of the United States exceeds that of any other country. It realizes that the country's technical communication facilities are as good as those of any other country (but it is of the opinion that they are not of the greatest possible use to the people under the present conditions, particularly as regards organization, extent, and rates).

One member particularly urges that these facilities have been developed through competition. He also believes that the continuation of a policy of enforced limited competition in the wire and radio telegraph field under the guidance of a policy regulatory body, whose duty it would be to determine the number and types of telegraph companies competing in various areas, will continue to develop our telegraphic communication service and facilities to a greater extent and at far less cost to the Government that would occur through rigid regulation of rates and service.

The domestic telephone service of the country is mainly provided by the American Telephone & Telegraph company and its associated companies. The service rendered by this company is technically the best in the world, but there are many complaints that it is too expensive. Recently the company has introduced over its wires a rented "teletype" service which the telegraph companies feel is an invasion of the field of telegraphy. Both those conditions should be made subject to the consideration and decision of the proposed regulatory body.

The Bell System owns over 80,000,000 miles of wire (in cables and open construction) which reach all sections of the United States.

The extension of the telegraph service to territory not now served is, in general, impeded by the cost of such extension. The wires of the telephone company now reach very many communities not provided with telegraph offices. Inasmuch as the telephone wires now reach all these small places and can by proper equipment be used for telephony and telegraph, simultaneously, without mutual interference, provisions can be made through proper regulation by which the telegraph service can be extended through the use of these telephone facilities to many of these communities not now served. However, one member believes that only through strenuous and costly Government efforts will the telegraph companies ever be compelled to install telegraph offices and pay operators to operate stations in towns where the volume of telegraphic communication is so small that the office does not pay. He believes that it is because of this lack of business in the majority of small towns, rather than the expense involved in competition in large cities which prevents extension of telegraph service to those small towns. However, the regulatory body could compel the telephone company to handle telegrams by telephone to small towns at fair rates.

There is no existing communication policy for the development of improvement of our national communication facilities nor one single office in Washington to which all communication problems can be referred.

The committee believes that the communication service so far as congressional action is involved should be regulated by a single body.

The committee believes that rigid regulation under a regulatory body exclusively devoted to that duty:

1. Will reduce rates by regulating profits and overhead expenses and intercompany charges.
2. Will prevent discrimination.
3. Will control exclusive contracts which are made by communication companies with hotels, railroads, and foreign countries.
4. Will regulate annual depreciation charges.
5. Will prevent speculative management.
6. Will prevent the "watering" stocks.
7. Will permit the extension of service in localities and homes not now served.

One member observes: The committee has been given no opportunity as yet to make a study of the telephone situation in the United States, except for the meager data contained in the report. There is a feeling, however, that the cost of renting telephones is too expensive and the other members propose to remedy this by clothing the proposed Federal regulatory body with power to regulate service and rates. He feels that perhaps the overhead expense claimed by the telephone companies, on which rests one of the main bases for their rate structures, and which must be paid for by the telephone subscriber, may be too great. The absence of competition (which, nevertheless, is undesirable on a grand scale in this field for reasons he has already indicated) is probably the major cause of such high rates. However, he claims no knowledge on which to base any assertion that a Federal rate control body can remedy the situation. In fact, he is inclined to believe that such rate control by a Federal regulatory body would be almost impossible without enormous expense to the Government and unprecedented invasion of the principal of State rights.

Almost the entire expense of the telephone companies is incidental to local service and plant charges. State and municipal regulatory commissions have authority to regulate local charges based on these expenses. The Interstate Commerce Act prohibits the Interstate Commerce Commission from regulating intrastate rates. As only about 1½ per cent of the telephone traffic is on long-distance business, comparatively little revenue is received by the telephone companies for long-distance interstate or foreign calls and this type of service does not appear to be unduly expensive even now. For the Federal rate-regulating body to attempt to regulate interstate rates would necessitate investigation by this body into the cost of services, plant structure, and financial condition of the telephone companies in every city in the Union.

This would entail considerable expense in order to obtain the questionable result of reducing rates on the comparatively few interstate communications handled by the telephone companies. On the other hand, if the Federal rate-control body is to actually function to reduce rates on the huge volume of intrastate traffic (which comprises about 98¼ per cent of the total telephone traffic, the rates on which are practically the only ones affecting the public to any great extent), the one

(*Please turn to page 29*)

CUT TELEPHONE APPARATUS TROUBLES

Periodic Inspection and Repair of Equipment Reduces Unnecessary Wear and Expense—Uniform Performance of Apparatus Promoted by Carefully Cleaning Contacts—Use of Proper Tools Saves Equipment from Injury and Prolongs Its Usefulness and Value.

By
T. De WITT TALMAGE

OPERATING results of telephone companies which have always maintained plants in good shape reveal the wisdom of handling repair work promptly and systematically at all times. During winter months when outside work is usually difficult and expensive, more attention is naturally directed to inside repair work which may have been slighted during good weather in favor of outside plant activities. For that reason this article will discuss some phases of maintenance of inside equipment

In this day and age when customers do not seem to be as plentiful as they once were, many telephone companies are encouraging and even educating their remaining subscribers to make a greater use of telephone service One of the ideas behind this movement is that the more a patron uses his telephone, the more the service fee will be justified in the subscriber's mind and the greater will be his inclination to keep our service.

Clearing-Out Signals

One of the essential activities which enters into such a program is to keep equipment troubles at a minimum in order to make our service attractive to those who use it. In a recent instance, the neglect of maintenance of clearing-out signals or ring-off drops was explained by the feeble alibi that "no one rang off any more except when they wanted to make a second call." In other words, a very desirable class of subscribers in this particular community—those who used their telephone service to the extent of making recalls—were actually being hampered and discouraged from using their telephones because many of the clearing-out signals would not function properly.

Skill in adjusting and cleaning supervisory signals is within reach of most men who will devote proper time and effort to the work. The civil engineer familiarizes himself with the structure and use of every part of a surveying instrument by taking it apart and putting it back together again. The army cadets are taught how a machine gun functions by dismantling the gun and then reassembling it. Likewise, an intimate knowledge of clearing-out drops, keys and other items of telephone apparatus may be secured by examining the equipment closely and if an extra piece of apparatus is available, taking it apart and putting it back together again until the exact function of every individual part of the assembly is fully understood.

One development in magneto supervision has resulted in combining two clearing-out drops, the ringing and listening key and the ring-back key, into a single apparatus unit. Clearing-out signals are placed in front of cord circuits in the keyshelf where they are plainly visible at all times.

Easy to Maintain

Shutters of this keyshelf-type clearing-out signal are seen through windows of two housings on top of the mounting plate. These shutters are linked mechanically with the listening key lever so that they are automatically restored to their normal positions by throwing the key lever to the listening position. The unit is simple and easy to maintain and requires practically no attention.

However, it should be realized that any piece of apparatus which is constantly used over an extended period of time will require some adjustment occasionally. For that reason it is merely "good business" to see that various operating parts of telephone equipment are kept in perfect condition by periodic inspections and tests.

Manufacturers of telephone equipment can furnish a test jack which can be used to show instantly the operating condition of supervisory signals. This test jack can be installed in the face of the switchboard just beneath the line drops. With such testing equipment available, a test is provided which is equal to average line conditions.

Failure of the shutter of the supervisory signal to operate freely may be caused by an accumulation of dust and dirt on the moving parts. This can be removed conveniently with a clean, lint-free cotton cloth which has been moistened with chemically pure carbon tetrachloride. Toothpicks or orange wood sticks may be used to apply the cloth to surfaces to be cleaned and will result in removing gummy substances in locations which are ordinarily difficult to clean.

Every switchboard room should be well supplied with a sufficient number of outlets and good extension cords so that adequate light and necesasry electric power can be available at all points needed. Not only are these cords used for the vacuum cleaner and the electric soldering copper but they furnish light for the proper inspection of the switchboard, for illuminating out-of-the-way corners of the switchboard when working on the equipment and for clearing trouble in the switchboard. Good light will do much to expose little mechanical troubles which might otherwise be overlooked when adjusting clearing-out drops.

In the case of the clearing-out signals located in the keyshelf, sometimes failure of the shutter to operate freely may be caused by having too heavy tension of the spiral spring which is attached to the drop armature. This tension can be reduced by bending the brass hook, which holds the spring in place, toward the drop frame. If the shutter falls too easily, increase the tension of the spring by bending the brass hook away from the drop frame. Check the distance through which the armature travels and see that it has not been changed from some accidental cause such as bending of certain pieces of the assembly.

Extra Parts On Hand

If the shutter shows no tendency at all to operate, test the associated switchboard cord and plug for an open conductor, also test the drop coil and connections on the drop coil. Coils with short-circuited turns are extremely undesirable from the standpoint of transmission. A few extra ring-off drop coils should always be kept on hand to replace coils which develop faults.

The moving parts of signals and keys are designed so as to require no lubrication. These parts should never be oiled. Failure of these parts to operate freely is generally due to an accumulation of dirt or some other foreign deposit which when cleaned away will

usually clear up the trouble. Fundamental precaution to observe, of course, is to keep all parts free from dust by the regular use of a vacuum cleaner.

Vacuum cleaners can be secured now equipped with special nozzles and attachments for telephone switchboard cleaning routines. Vacuum cleaners have an advantage over the brush method of dusting in that they gather up dust without spreading it to other apparatus. Quiet running vacuum cleaners should be used regularly on the switchboard at times when it least interferes with the work of operators.

Toothpicks Used

The most generally used method of cleaning night alarm contacts, key contacts, relay contacts, switchboard contacts, etc., makes use of hardwood toothpicks and chemically pure carbon tetrachloride. Do not use ethyl alcohol or ether because they are violently explosive when mixed with air. Carbon tetrachloride is non-inflammable and relatively inexpensive and may be purchased from any telephone equipment manufacturer or a chemical or drug supply house. Be sure to definitely specify that only *chemically pure* carbon tetrachloride is desired because ordinary commercial grade of this cleaning liquid sometimes contains impurities which are harmful to telephone apparatus contacts.

In addition to the usual deposits of dust on contacts, sometimes a greasy film is encountered. The natural oil on the hands of the installer or repairman is often sufficient to cause trouble when contacts are handled. In one case, serious trouble was caused merely by the practice of the repairman of wiping off the blade of his contact burnishing tool by drawing it between his fingers. Such a foolish practice is to be condemned most heartily.

In using chemically pure carbon tetrachloride, a *clean* toothpick is dipped into a bottle of the liquid for about one-half inch or so and then inserted between a pair of contacts. To avoid contaminating the contacts, the surface of the toothpick which is soiled by the fingers should never be allowed to touch the contacts. By rubbing the moistened toothpick back and forth several times, and at the same time permitting the contacts to exert a little pressure against the wood, there is a scouring action that will soften most deposits of foreign matter.

One Toothpick Per Set

It is extremely important that a toothpick be used but on one set of contacts. This practice prevents spreading the deposit from a dirty pair of contacts to a clean pair of contacts. It is suggested that the toothpick be broken in two parts after it has been used once. This will prevent it being used a second time by mistake. It is also suggested that the toothpicks be kept in a clean container which will prevent dust and dirt settling on them. One company uses a metal case whose outside dimensions are two and three-eighths inches by one inch by three inches. This container was purchased from a tobacco shop and was originally designed for use as a cigarette case.

After scrubbing the pair of contacts with the toothpick, a drop or two of chemically pure carbon tetrachloride may be used to flush off the sufaces. This drop of cleaning liquid may be picked up on the end of a clean toothpick, a pointed orange wood stick, or by means of a medicine dropper. When flushing the contacts, be sure that the sides as well as the tops of the contact points are thoroughly washed off, for dirt on the sides is loosened when the liquid is applied, and if this dirt is not removed or flushed away it may later be deposited upon the contact surfaces.

The flushing operation is done with the contacts held separated. There is danger that the dirt which is loosened by the liquid may localize between the contact surfaces because the greatest amount of liquid is held between these points just before evaporation. For that reason the scrubbing process with the toothpicks moistened with the cleaning liquid should be done quite carefully and thoroughly so this dirt residue may be held down to a minimum. As the final step in this part of the cleaning routine, many maintenance men use a clean, dry toothpick to rub off any particles of dirt that may be left behind by the scrubbing and flushing operations.

Tools Should Be Used

After the dirt and other foreign substances have been removed from the contacts, approved cleaning and polishing tools should be used to remove any film or discoloration that may still be present, as well as to smooth over and polish the clean metal surfaces. One reason why many apparatus maintenance jobs are neglected is that proper tools are not on hand to do the work quickly and conveniently. To do good work the workman must be provided with good tools that are especially designed for the particular job to be done. Manufacturers of telephone apparatus can furnish the proper size and type of tool for every maintenance job. After the correct tools are procured, they should always be kept in one assigned place when not in use so they can be found when required.

Do not file contacts. A contact cleaned by filing away some of the surface metal is never satisfactory. Filing leaves contact surfaces flat and rough, giving an ideal condition for collecting and holding dust or other foreign material, which will act as an insulator and prevent the proper closing of the contacts. Furthermore, sharp projections on the contact surfaces, no matter how small, increase the tendency of the contacts to arc which causes pitting of contacts and carbonizing of certain kinds of foreign deposits on the contact surfaces.

Clean Blades Needed

Blades of the special contact cleaning and burnishing tools must be kept clean by frequently wiping them off with a clean cotton cloth dampened with chemically pure carbon tetrachloride. *Do not contaminate or soil clean blades by putting the fingers on them.* Moreover, because air is usually carrying dust, clean blades should be kept well protected when not in use by storing them in a suitable box or carrying case. One type of cleaning and burnishing tool has a hollow handle for storing blades.

The hollow handle type of tool is equipped with a chuck at one end for holding the blade. This type of tool is made in two sizes, the larger size is especially designed for work on key contacts while the smaller size is more convenient for relay contacts. Another firm manufactures a combination contact cleaning and polishing tool, made out of stainless steel.

One of the newer developments in care of contacts is the use of a tempered stainless steel blade with a highly polished finish for smoothing down minute rough edges and reducing the microscopically small jagged ridges left by ordinary contact cleaning blades.

Finished Touch to Job

In polishing normally-open contacts, press the contacts together sufficiently to give a slight pressure on the blade of the highly-polished piece of stainless steel. In the case of normally-closed contacts, tension of the springs themselves will ordinarily furnish sufficient pressure against the polishing blade. Usually, rubbing the polishing tool blade back and forth several times between contacts will give the desired result.

Never use a metal blade on a dirty contact. Always clean the contact first with a toothpick and chemically pure carbon tetrachloride after the fashion already outlined. Otherwise it would be necessary to clean the steel blade after each pair of contacts had been burnished and polished.

Polishing the contacts after they have received cleaning treatment gives a finished touch to the maintenance job. It is one way of turning out a truly burnished contact surface. Generally speak-

(*Please turn to page* 34)

DIRECTORY ADVERTISING--- YOUR REVENUE

By
R. C. RENO
Editor
TELEPHONE ENGINEER

TELEPHONE directory advertising as a revenue producer has been receiving increasing attention on the part of telephone companies during the past few years. However, in many cases, telephone companies have not been able to sell enough advertising to pay the cost of publishing their directories, and there are now many red figures in reports of telephone companies for this by-product of the industry, just as there are in other branches.

On the other hand a considerable number of telephone companies have found it possible to go through the difficult period of the past few years with black figures for their directory department, and in these cases an analysis will show that practically every one of these companies has given particular attention to this feature of its business, either by carefully training their own salesmen to sell telephone directory advertising, or by contracting with an outside advertising sales company to do the selling.

Telephone directory advertising occupies a favorable position in the eyes of the public as a publicity medium, but even so it is necessary to devote time and effort in planning the best method to cover all advertising prospects in a community, if proper results in sales are to be obtained.

There are many forms of advertising available for local merchants and business people, and if the local telephone directory is to secure its proper share of the advertising business the interviews with prospective advertisers should be thought out in advance so that each advertiser will receive the space or listings which will do him the most good, thereby making a satisfied customer who most likely will renew his contract the following year.

Telephone executives should realize that any additional profit they can make for their company from advertising in their telephone directories is secured without any investment in plant or equipment, and for this reason they should be willing to exert aggressive efforts to make a profit in this department. There have been for many years a number of independent advertising sales organizations specializing in the sale of telephone directory advertising, and their success has been due largely to the fact that their salesman have all of the experience and information necessary to answer all questions and objections on the part of prospects, and because the salesmen are devoting their entire time to this one line of activity, they become much more proficient in their work than if they were spending only a small part of their time in this branch of selling, as is often the case with telephone executives and other employees who look after the sale of their own advertising.

There has been a distinct trend on the part of both Independent and Bell telephone companies during the past few years to contract with outside advertising sales organizations to sell their directory advertising, either on a commission basis, whereby the amount paid the selling agency is based upon the total sales, or on a complete publication basis whereby the selling agency sells the contracts to advertisers and also publishes the directory.

The advertising in the telephone directories of the three largest cities in the United States, New York, Chicago and Philadelphia, is now being sold for the telephone companies by outside advertising sales agencies, as are also a large number of directories in cities and towns of all sizes from coast to coast. One advertising company alone is now selling the directory advertising in more than 2,500 cities and towns in that part of the United States east of the Mississippi River.

This same company has paid particular attention to instructing its salesmen in the matter of public relations, so that the subscribers of the telephone companies are always left in a good frame of mind, regardless of whether they buy advertising space or not. This company realizes that good public relations are necessary not only for the telephone companies, but also for the advertising company if it is to properly succeed in building up the advertising revenue in a given territory over a period of several years.

Complaints of all kinds of subscribers, inquiries regarding service and additional equipment, and all questions pertaining to the telephone company are handled as carefully by the advertising salesmen employed by this directory advertising company as if they were permanent employees of the various telephone companies.

Telephone directory advertising is in a class by itself, and is a hook-up for all other forms of advertising done by local concerns. Many forms of profitable advertising such as newspapers, direct, mail, radio programs, etc., are short lived, and there is very little advertising value after the date the announcement appears. The telephone directory is in use usually for a period of time from six to twelve months, or even longer, and it is always conveniently located adjacent to or near the telephone instrument itself so that it can be referred to and the advertising seen at an instant's notice.

The telephone directory reaches a great majority of the people who have the largest buying power, and is used at some time by nearly everybody in a community who can read and write; even those people who do not have telephones of their own frequently are obliged to make calls from other telephones, thereby using the directory.

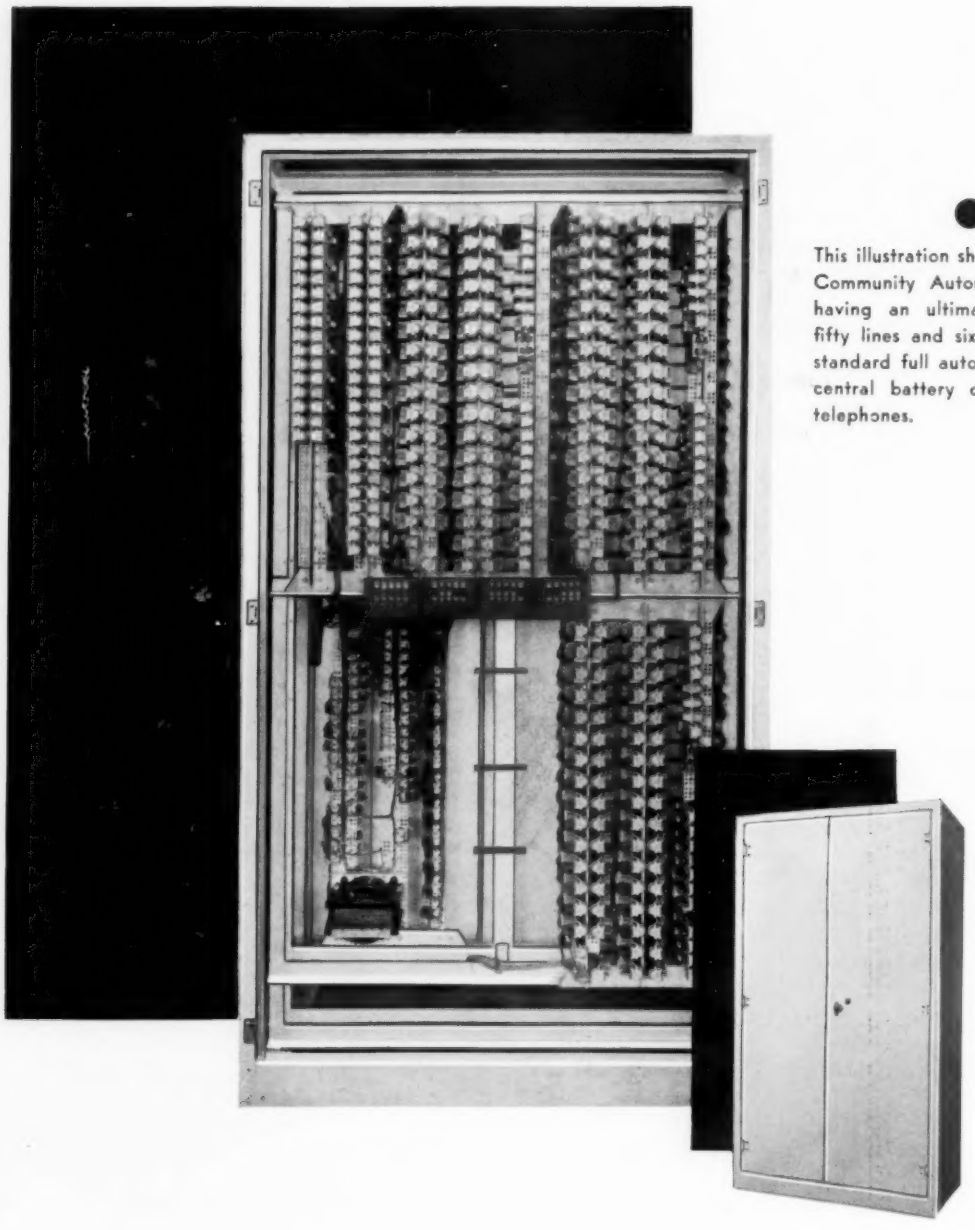
A large number of orders for goods and services are placed by telephone in every community daily, and telephone directory advertising is seen by people when they are in a buying mood. This class of advertising often saves the time of subscribers because they are enabled to quickly find who handles certain types of goods and services.

Whenever telephone directory advertising increases the business which a subscriber secures over the telephone, then the telephone service becomes that much more valuable to the subscriber.

(*Please turn to page* 35)

4th Article Of a Series
On Revenue Producing Products

The Unfailing Reliability



This illustration shows an All-Relay Community Automatic Exchange, having an ultimate capacity of fifty lines and six links. Provides standard full automatic service to central battery or local battery telephones.

AMERICAN AUTIC

AUTOMATIC ELECTRIC COMP

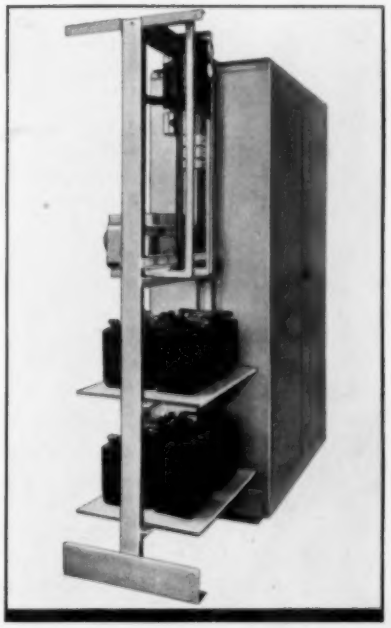
AUTOMATIC ELECTRIC

tyhat Comes
olong Practical Experience

Autelco All-Relay Switchboards are built throughout from andard "horizontal" relays of the type which has been used in nnection with Strowger switch designs almost from the begin- ng of automatic telephony. Telephone men that are familiar ith Strowger equipment would want no better evidence of reli- bility, for these relays are esteemed for their long life and ouble-free service wherever they are used.

Autelco all-relay switching circuits, too, have stood the test f time. The first Autelco all-relay designs were perfected venty years ago. Today, these same fundamental designs, with ie inevitable refinements that the intervening years have wrought, fing to telephone companies the traditional excellence that as always characterized the products of this pioneer automatic elephone organization.

All-relay switchboards are available for central battery or cal battery operation, and for use on either grounded or metallic nes. Inquiries are solicited and studies will be made promptly, ithout cost or obligation.



A typical all-relay installation of Automatic Electric Company's manufacture, complete with power equipment. A switchboard of this kind, like any other type of C-A-X, can be placed in a very inexpensive building on a low cost location, or in the back room of a store or residence.

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DATA FOR RATING TELEPHONE CIRCUITS

By
F. W. McKOWN
and
J. W. EMLING

From the July, 1933 issue of the Bell System Technical Journal

The Articles on "Rating Transmission Performance" by W. H. Martin, published in the November, December and January Issues of TELEPHONE ENGINEER Introduced the Idea of Rating Transmission Performance of Telephone Circuits on the Basis of Repetition Observations and Outlined Briefly a Method for Expressing Such Ratings. This Article Begins a Series Describing a System for Presenting These Data in a Form Suitable for Engineering Use and Steps Required for Obtaining These Data From Repetition Observations.

A TELEPHONE circuit may be described in terms of its physical characteristics, but these characteristics do not in themselves indicate the transmission results which will be obtained by its users in service. Laboratory talking tests, such as articulation tests,[1] indicate the ability of the circuit to transmit speech sounds under the conditions of the tests. In service, however, a wide and complex range of conditions is encountered and in the case of a new kind of instrument or circuit the service conditions may be modified in an unpredictable way due to the users' reactions. The complexity and a priori uncertainty of these conditions point to the advantage of ratings obtained during actual service.

The real criterion for rating a circuit is its transmission performance when in actual use as a link in the extremely complicated and variable communication channel between the brain of one telephone user and the brain of another telephone user.

The article on "Rating Transmission Performance" (published in the November, December and January issues of TELEPHONE ENGINEER) fully developed this idea and described a quantitative method of providing ratings on this basis of the transmission performance of a circuit, which method includes the effects of such circuit characteristics as volume loss, noise, distortion and sidetone. This method uses as a measure of circuit performance the number of repetitions requested by normal telephone users per unit time while using the circuits in actual service, on the basis that this number is a direct quantitative measure of the success with which telephone users carry on conversations. Mr. Martin's paper also discussed other methods of rating the transmission performance of telephone circuits such as articulation tests, volume tests and judgment tests and their relation to the repetition method.

System of Data

This article describes the development of this rating method into a system of data for exchange area circuits which gives a convenient means of determining from the physical makeup of a complete telephone circuit a rating of the effectiveness of the transmission between normal subscribers using the circuit. Such data are called *effective* transmission data to distinguish them from previous transmission data which were based largely on volume losses.

The effective data are expressed in terms of the db of effective loss relative to a reference circuit. An effective loss of 1 db is introduced into the reference circuit when the loss of the trunk is increased by 1 db at all frequencies without other change. Any other change in the circuit which has the same effect on its transmission performance as this distortionless change in volume loss also causes an effective loss of 1 db. The equality of performance is judged by the equality of repetition rates.

The problem of converting repetition data obtained from a relatively small number of circuits into usable transmission ratings for the very large number of practical circuit combinations resolves itself into two major parts: first, a choice of the form in which the data should be presented for use in laying out the telephone plant, and second, the actual preparation of the numerical data.

Service Standard

The preferable form for presenting the data is fixed by the nature of telephone exchange service. The general transmission problem is not to design a complete telephone circuit from one particular station to another particular station, but rather to design each circuit element separately in such a way that any complete circuit made up of these elements will give satisfactory transmission. Thus, each element, such as a subscriber loop or an interoffice trunk, must be designed to work as a part of any one of a large number of different connections.

The technique for solving this problem on the basis of volume losses was worked out long ago in a satisfactory way and has been in use for many years. Volume loss data were prepared in convenient form for all available types of circuit elements, with the losses of the elements defined in such a way that when all the component losses were added the loss of the complete connection was obtained. These component volume losses were based, in general, on voice-ear tests or computations showing the effect on the volume of the received sound, of inserting the element to be rated in a reference system. With data set up in this way, it was possible to apportion the permissible overall rating between the different types of circuit elements and then to choose the facilities for each individual element separately so that its loss would not exceed the permissible loss. In a particular area, for example, the transmitting loss of each loop might be limited to 8 db or less, the receiving loss to 3 db or less, the total office losses on a connection to 1 db or less and the losses of an interoffice trunk to 6 db or less. In this case, no interoffice connection would have a loss of over 18 db regardless of which stations in the area were involved. This method makes it possible to design the circuit elements separately and also simplifies the presentation of data for the very large number of combination of facilities available for the telephone plant.

Advantages of Form

A method has been developed for assigning effective loss ratings to parts of a circuit and presenting them in a form very similar to that used for the volume loss data. The advantages of this form

1. "Articulation Testing Methods," H. Fletcher and J. C. Steinberg, B. S. T. J., Vol. VIII, p. 806. "Developments in the Application of Articulation Testing," T. G. Castner and C. W. Carter, Jr., July, 1933 issue of the B. S. T. J.

are retained, therefore, even though the data include the effects of distortion, sidetone and noise in addition to volume losses.

The second problem, the preparation of numerical transmission rating data for the various types of facilities available for use in the telephone plant, requires a somewhat indirect attack because of the large amount of data required. Theoretically it would be possible to obtain relative effective ratings directly by means of repetition counts for all the circuit and instrument combinations which might be of interest in plant design. These ratings of complete circuits could then be broken down into ratings for the individual circuit elements.

This method of attack, however, is entirely impractical because there is an almost infinite number of combinations of circuit elements and it would take some weeks of observation time on each combination. It is necessary, therefore, to make observations on a relatively small number of circuits chosen to cover the whole range of conditions and to obtain ratings for other circuits by interpolation between the ratings which have been obtained directly.

Method of Interpolating

The method of interpolating which has been found practicable is based on the fact that the performance of a complete circuit can be described, with sufficient accuracy for most engineering work, as a function of the characteristics, volume loss, sidetone, distortion and noise. The magnitude of all of these characteristics, for any circuit using conventional types of instruments, can be derived from physical measurements. Since this can be done for each of the circuits used in the repetition tests, relations can be obtained for converting changes in noise, sidetone, or distortion into equivalent distortionless changes in volume loss. For any other complete circuit, it is necessary only to determine the magnitude of these characteristics by measurements and computations, and to convert them to effective ratings by means of the relations. These ratings of complete circuits can then be divided up into ratings of individual circuit elements.

As stated before, the purpose of the effective data is to give a means of computing a transmission performance rating of a complete telephone circuit from the physical makeup of the circuit. These ratings, which are called effective transmission equivalents, are based on the definition that two complete circuits have the same effective transmission equivalent when under the same conditions of use they give the same grade of service as indicated by the repetition rate. The term *complete circuit* as used here includes the transmitter and receiver as well as the other elements of the electrical circuit. Circuit noise is, of course, one of the characteristics of a circuit and room noise may be treated as if it were a circuit characteristic, since it affects the transmission results obtained by the users of the circuit.

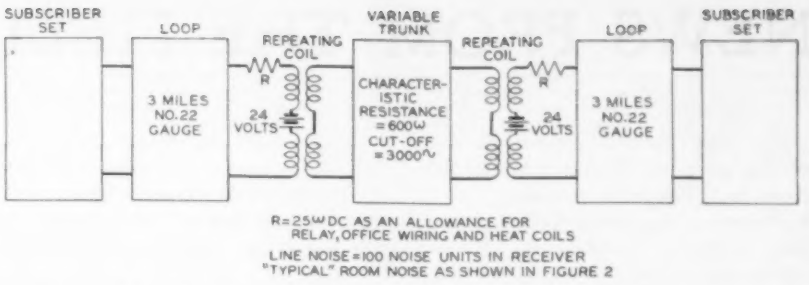

Fig. 1. Working reference system for the specification of effective losses.

Reference System

In addition to adopting a criterion for the equality of two circuits, it is necessary to adopt a scale for the rating of circuits which differ in performance over a wide range. This has been done by a method analogous to that used for expressing volume equivalents. A reference circuit has been selected, to which a rating has been assigned as discussed below. This reference system may be varied from its normal adjustment by distortionless changes in the loss of the trunk, which forms a part of the system, until the reference system is equal in performance to the circuit being rated. Each change in 1 db in this trunk by definition changes the effective equivalent of the reference system by 1 db. Thus, the effective equivalent of circuits may be determined by comparison with the reference system.

The requirements of a reference system for effective transmission equivalents are: (1) that it be reproducible from simple physical measurements, and (2) that its performance can be compared with the performance of the circuits to be rated. Theoretically these are the two requirements for the reference system if it is to be used simply for rating complete circuits. As discussed later, since the system is to be used for determining effective losses of circuit elements as well as effective equivalents of complete circuits, there is the additional requirement (3) that it have characteristics similar to the commercial circuits to be rated. No system is available at present which fully meets all three requirements or even the first two, since present systems meeting requirement (1) are essentially laboratory devices and cannot be compared with other circuits under typical operating conditions. In order to meet the last two requirements, it has been necessary to adopt for the present a working reference system which is described in terms of particular instrumentalities instead of in terms of physical measurments. As plant conditions change other working reference systems may be required. If any other reference system is adopted

(*Please turn to page* 35)

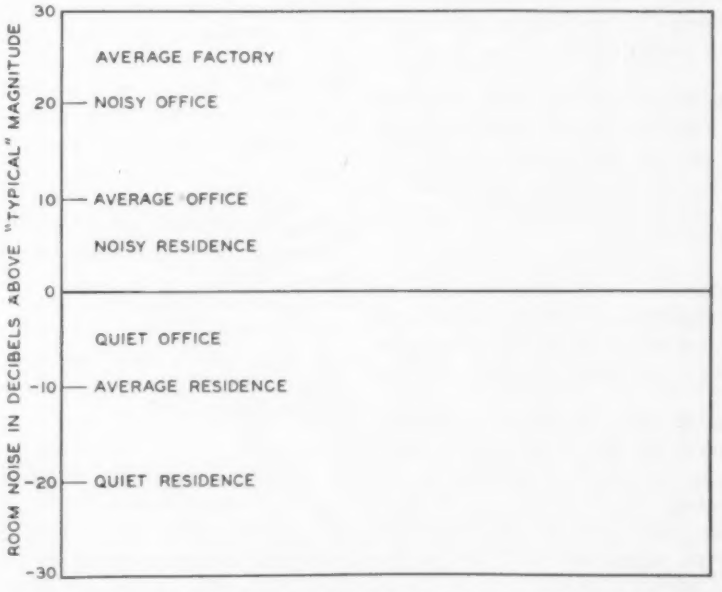

Fig. 2. Room noise in familiar locations relative to typical magnitude.

NEWS FROM THE FIELD

The New Mexico corporation commission gave the Mountain States Telephone and Telegraph company, and the Southeastern Associated Telephone company, authority to drop the 25 cents per month charge for use of hand set, or French telephones after 36 months consecutive use. This means that after the use of the hand set phones have paid the company a total of $9 the company will no longer charge them extra for using this new type telephone.

Middle States Utilities company are rebuilding the entire outside system of the Memphis, Mo., telephone company.

All the poles of the company will be taken out and replaced with new ones and new wiring will be put in place of the old. It is said that the entire outside system throughout Memphis will be built new.

The 47th anniversary of the Home Telephone company, Spokane, Wash., was celebrated recently with an open house at the office for the general public.

On the birthday of the firm, all the original subscribers, now in Spokane, were invited to a luncheon given in the telephone building.

Bell Telephone company have repaired the company's lines between Lamoni and Kellerton, Ia.

The work was supervised by G. D. Evans. Worn out poles were replaced and the associated wire work was taken care of over a stretch of about four and one-half miles.

Telephone lines in the west part of Wellsburg, Ia., have been placed in a conduit underground.

The Bellamy (Iowa) Telephone company has had ten men working on putting down an underground cable. The new underground cable will carry the main circuit of telephone wires for the east part of town.

Reductions of 25 cents a month for city subscribers and $1 a year for rural patrons were ordered by the corporation commission in telephone rates at Kingfisher, Okla.

The Western Telephone corporation, operating at Kingfisher, was directed to make the reductions January 1. The new rates call for $3 a month for a business phone, $1.50 for a one-party residence phone and $1.25 for a two-party residence phone. Rural phones will be $4 a year.

Employment was opened to a number of jobless recently as work was started by the Mansfield (Ohio) Telephone company on an underground conduit along the north side of the municipal airport.

This job is the first in a $30,000 expansion program announced by the company. Included among improvements are the rebuilding of exchanges at Butler and Lexington, with new buildings, equipment and dial telephones; rebuilding of toll lines to Olivesburg; and installation of an underground conduit off North Main street.

Work started is on an underground conduit which will require 4,000 feet of ditching to carry a cable underground from North Main street to the Erie tracks at the east of the airport, there to be connected with an aerial line running to the Olivesburg road.

The Ohio Standard Telephone company petitioned the commission for authority to retain from January 1 to June, 30, 1934, the supplement whereunder it has, for the past year, billed subscribers the net rentals, monthly, except for switching service.

A $16,000 outside plant improvement program will be started in Zanesville next week by The Ohio Bell Telephone company to provide additional facilities and improve plant conditions.

More than 1000 feet of underground conduit, 2500 feet of underground cable, nearly two miles of aerial cable, and 60 poles will be placed, according to P. W. Jarvis, the company's district commercial manager.

In addition to the work within the city, considerable improvement work is now being done on rural telephone lines around Zanesville. This work consists of rebuilding the rural lines in those places where such activity is necessary to place the lines on a 100 per cent efficient basis. Old poles are being replaced by new and much new wire is being strung.

Highway improvement projects are also keeping the Ohio Bell busy all over the state moving their lines back or rerouting and rebuilding them to clear the way for road widening.

A suit has been filed in the state supreme court at Jefferson City, Mo., by Roy McKittrick, attorney general, against the Southwestern Bell Telephone company. The case relates to the right-of-way granted the Bell company for an underground cable across Missouri along Highway 40. Authority was given during the Caulfield administration.

The job furnished work for thousands of Missourians along the line during an earlier period of the present depression. It also resulted in the erection of the beautiful booster station plant in Boonville.

The Southwestern Bell company has filed a demurrer and answer. The company contends that the information filed by Mr. McKittrick does not state facts sufficient to constitute a cause of action.

Judge Emory H. Wright of the circuit court at Kansas City has temporarily enjoined the Kansas City Long Distance Telephone company and the Southwestern Bell Telephone company from detaching from their poles wires belonging to the Central Missouri Telephone company.

The wires involved extend three miles west from Centerview, Mo., between Kearney and Holt. In its application for an injunction, the Central Missouri company alleged that in 1929 and 1930 it purchased all the assets of the Johnson County Home Telephone company, the Holden Telephone company, the Kearney Telephone company and the Holt Telephone company, which included a perpetual easement granted by the Kanas City Long Distance Telephone company, to extend wires over the poles of the latter company.

February 15, 1929, the Southwestern Bell Telephone company leased the line of the Kansas City Long Distance Telephone company, from Kansas City to Sedalia, Mo.

The petition alleges the lease was made subject to all rights, privileges and easements which had been granted by the Kansas City Long Distance Telephone company.

The Central Missouri Telephone company alleges the defendants have detached its wires from twenty poles, and are threatening to remove all of the wires on its toll lines between the towns mentioned.

Eugene Kelley, proprietor of the Waterloo Telephone Exchange, has remodeled the building he recently purchased of Johnson Bros. on East VanVleck street, opposite the telephone exchange, and has converted it into a garage and warehouse for the telephone exchange. The building is heated and it furnishes an excellent place for storing the property of the telephone line. The old barn on the rear of the lot occupied by the telephone exchange, is being dismantled and will soon be razed.

MINNESOTA CONVENTION WELL ATTENDED

THE 25th annual convention of the Minnesota Telephone association held Tuesday, Wednesday and Thursday, January 23, 24 and 25, at the Radison Hotel, Minneapolis, was one of the best conventions held in that state during the past few years.

The attendance was greater than last year and the sessions proved to be popular and valuable to Minnesota telephone men.

President Leland Wright, secretary and manager of the Alexandria Telephone company, opened the first session of the convention Wednesday afternoon with his annual address.

President Wright reviewed the problems of the telephone industry during 1933 among which were legislation, station losses, NRA legislation, public relations, but stated that we are behind this and that telephone men should forget about 1933 and go into 1934 "with a grin on at least on one side of our faces anyway."

During this talk Mr. Wright led a rising vote of thanks for the work the association's popular secretary, J. C. Crowley, had done for the association.

Earl E. Shemick, safety engineer, Liberty Mutual Insurance company, St. Paul, then spoke on the importance of having a good and reliable insurance company to handle the telephone companies' insurance. Mr. Shemick discussed workman's compensation and liability and property damage insurance.

"Some Accomplishments" was the topic of an address by E. B. Samp, division manager, Central West Public Service company, Sac City, Iowa, who told some of his experiences in building up public relations, collections and selling telephones.

Following Mr. Samp's address, President Wright introduced several out-of-state visitors, including M. M. Borman of Abercrombie, N. D., A. B. Clark, general manager, Nebraska Continental Telephone company, Columbus, Neb., and C. E. Nelson, of the Western Union Telegraph company.

Members of the convention committees were then announced by President Wright, after which the session adjourned. The committees named were:

Resolutions: J. P. Keene, Pine Island; Miles Vopatek, New Prague; Vies Martinsen, Sebeka; J. Max Osborn, Onamia; and B. W. Hohman, Pelican Rapids.

Nominating: Walter X. Jones, Benson; James A. Innes, Kimball; G. L. Wilder, Granite Falls; Charles R. Cashel, Worthington; and Paul A. Glaeser, Waconia.

At the Wednesday morning session two Northwestern Bell motion pictures were shown. The first speaker in the afternoon was Walter E. Olson, former secretary-manager of the Mankato Chamber of Commerce and now secretary of the Minnesota Law and Order League. His subject was "Trend of the Times" in which he told of the country's fight against crime and law-breakers.

Mrs. Olivia Johnson, president of the Zonta Club of St. Paul, then spoke on "Women and Their Positions" discussing the importance of women in today's business and advocating equal rights for men and women.

Frank C. Builta, assistant to the president, Northwestern Bell company, Omaha, Neb., spoke on the building up of good public relations as one of the most important jobs of the industry. He discussed ways of creating better public relations among which is advising the public as to the problems of the telephone company through advertising and direct mail and the holding of "open houses".

Dr. L. M. Gould of the department of geology, Carlton College, Northfield, next presented an interesting illustrated address on "With Byrd to the Bottom of the World".

"A Few Remarks" was the subject of an address by Lyman E. Wakefield, president, First National Bank, Minneapolis, who gave his opinions as to the causes of the depression.

Mr. Wakefield traced the over-production practices which began with the World War, the consumption of which receded after the war; the stimulation of foreign markets by international bankers loaning them money with which to buy our surplus product and finally the inability of the American public to buy what was being produced, all of which helped to start the depression. He characterized the boom period as a mass movement, and stated the only way out of the depression was the return to old business principles, which is being done today.

C. C. Deering, Des Moines, Iowa, secretary of the United States Independent Telephone Association, in the absence of F. B. MacKinnon, president, Thursday morning, told of the National Association's "Activities in 1933 and 1934". Mr. Deering told of the work relative to the NRA, Mortgage Loan Corporation and the communications commission bill, all of which have been described in recent issues of TELEPHONE ENGINEER.

The auditing committee's report was then presented by T. C. McCoubrey of St. Paul, which was accepted and filed.

Following the nominating committee's recommendation that the present directors be re-elected the following men were unanimously elected: P. M. Ferguson, of Mankato; Jay Greaves, of Glencoe; A. H. Dreyer, Starbuck; G. M. Dwelle, Lake City; H. F. Lueders, of Norwood; Hans Swanson, of Warren; S. A. Rask, Blooming Prairie; Irving Todd, of Hastings; Mr. Wright; and F. C. Marvin, of Zumbrota.

At the organization meeting of the directors following the concluding session of the convention, all officers were re-elected as follows: President, Mr. Wright; vice-president, Mr. Marvin; and secretary-treasurer, Mr. Crowley.

The report of the resolutions committee embodied two resolutions on the death of Levi Johnson of Watertown, who passed away on January 15, and Herman Tollefson, Kasson, who died November 28, 1933.

The convention closed following a round-table discussion of three subjects of which Mr. Crowley was chairman. The subjects discussed were "Improving Public Relations with Service Line Companies", "Best Methods on Collections and Credits" and "Best Methods of Securing New Business and Reconnecting Lost Stations".

The conference was unusually interesting and valuable and the subjects were discussed by J. W. Howatt, Northwestern Bell Telephone company, W. A. Eckles, Blue Earth; Miss Frances Snyder, Mr. Eckles' secretary; H. O. Bloyer, Remer; Mr. Gotch, Dexter; Mr. Greaves and Will Clay, Hutchinson.

MRS. F. A. KNAPP DIES

Mrs. Frank A. Knapp, of Bellevue, wife of the president of the Northern Telephone company passed away during late December.

Mrs. Knapp was greatly esteemed in her home city and was active for many years in religious and community work. She is survived by her husband and five daughters. One of her daughters is Mrs. Wm. C. Henry, wife of the general manager of the Northern Ohio Telephone company.

EXCHANGE SOLD

R. P. Van Riper has so'd the telephone exchange at Penalosa, Kans., to Wilbur Geist. Van Riper will continue in the hardware business there. He had operated the exchange for the past 15 years.

RAMBLEGRAPHS

By J. A. S.

J. A. Smith, publisher of TELEPHONE ENGINEER, received a wire while in New York that his brother, Edward P. Smith had died in Fort Worth, Texas, former home of the publisher and present home of Aaron Smith, former publisher of TRANSMITTER and who has a large number of friends throughout the country. Edward Smith died after a short illness of pneumonia. He was employed as pressman in the printing plant of Aaron Smith at Fort Worth.

* * *

While we were still in Elyria, Ohio, on this trip to the East we went over on cemetery hill and visited our old friend, Fred Heavens of Telkor, Inc. Fred is one of these optimistic fellows who will win in spite of the proverbial h. and h. water. Yes, sir, Fred is a good fellow to visit when you feel blue. He tells us he has Telerings in almost every country where telephones are known, among Independents, Bell and Government owned companies. Numbers of these companies have put several machines in operation. A revival of inquiries for information and prices convinces Fred that business is peeping out from the "around the corner," and he is busy making machines for future delivery.

* * *

R. B. Still, former general manager of the Gulf States Telephone company, down in Texas, also president of the Texas Independent Telephone association for a number of years, writes from Portsmouth, Ohio, to congratulate the publisher of TELEPHONE ENGINEER upon his twenty-five years as publisher, the occasion being the Silver Anniversary of TELEPHONE ENGINEER. No one knows better than Mr. Still the "rocky road to Dublin" traveled by this publisher during the past two and a half decades; as president of the Texas association he kicked some of the pebbles out of the path of Rambler and as personal friend and adviser he has endeared himself to the writer as few others have. The letter from Mr. Still will be treasured as one of the bouquets in the life of this writer.

* * *

Reaching Cleveland we picked up a newspaper to find that Charley W. McVey, scion of telephony in Ohio, but now on the retired list, had been appointed traction commissioner of Cleveland; just what his duties will be is not clear to the writer, but we'll wager our suspenders that whatever is undertaken by this gentleman will be a clean cut job that will reflect credit to him and the telephone industry. McVey will be remembered as head of the Associated Telephone company as late as two or three years ago. He entered the telephone business way back, 1899, and has always been interested in the affairs of this great utility.

* * *

Remembering that an old Texas friend, Fred W. Greber, former manager of the Brownwood (Texas) Telephone company, was living in Cleveland, we undertook to look him up; found him at the business of his brother, and had a pleasant and profitable talk with him. Fred stands out with those telephone men who did not lose their heads and try to show stockbrokers what pikers they were. On the contrary, he showed his business training by investing in securities that proved sound; he was lucky in the selection of banks during the bank crash of last year, and can thank his lucky stars that none of his cash is mixed with frozen assets of plunging bankers.

* * *

Of course we visited Howard Leinard. Who is it in the telephone industry wanting to learn of its ins and outs, that does not pay this gentleman a visit if he has the chance to do so? A trip to Cleveland is not complete without a visit to his office in the Ohio Bell Telephone building if in the quest of information and advice. Yes, we are glad to number Howard among our friends.

* * *

While rusticating around our room in the evening the telephone bell called us back to earth, and a pleasant voice told us that Loren M. Berry of Dayton, a director of TELEPHONE ENGINEER, was in the lobby and would we see him. Would we see him? I should say we would! We shall always be glad that we entered the publishing business if it's only compensation was to lead us into closer relationship with this very excellent gentleman. We are indebted to him for a very pleasant evening's entertainment, both the writer and his family. Mr. Berry told us of his visit to Europe, together with his wife and daughter. He stated that he found conditions much improved in England and Italy, and that other countries showed an inclination toward improvement. Mr. Berry also stated that his Canadian business was showing a certain degree of improvement which led him to feel that our own upward trend would prove permanent.

* * *

Brisking along on our trip across Ohio we stopped at Kent to see how the tree trimmers of the Davey organization were and if they could see any indication of a brighter lining to the clouds. Mr. Fowler of that company told us that present indications pointed to a more active campaign next year for Davey because they felt business was on the upgrade and they hoped to lead the procession.

* * *

Over in Pittsburgh we inhaled enough carbon black to polish the old cook stove, after spending four dreary days waiting for the snow, fog and rain to clear sufficiently for the Rambling family to wend its way over mountains to Harrisburg and other points of interest. Of course Independent telephone men are scarce around Pittsburgh but we found other interests there. The P. Wall Manufacturing company, through its representative, R. J. Christie, told us that a survey of business conditions led them to believe that much better business was in store for his company this year, and they expected to make special efforts to annex as much of it as possible.

* * *

Bennett W. Johnson, assistant sales manager of the Oliver Iron and Steel corporation of Pittsburgh, narrowly escaped serious injury during December when the taxi in which he was riding collided with an automobile in Cleveland. A lacerated face and other marks showed what a narrow escape he had.

* * *

Other friends in Pittsburgh, including M. M. Sharp of Hubbard & company, L. M. Christie of the National Fireproofing company, and J. E. Grennan of the Wood Preserving corporation added to the pleasure of our trip in the city of smoke.

* * *

Coming on down to Newport, Pa., we found E. W. Meyers at the offices of the Forged Steel Products company and he was jubilent over the present business as well as prospects for future orders. He stated that his firm was running steady and doing some night work to fill orders promised before the end of 1933. Through advertising and delivery of good products this firm has built up an enviable business in the telephone industry and Mr. Meyers asks us to say he appreciates very much the acceptance of his tools by this utility.

(*Please turn to page 28*)

ICE, SLEET . . . . miles of line down . . . . Wire stocks inadequate . . . . Rush shipments imperative . . . . Then, look to Jobbers of *Crapo* Galvanized Wire and Strand!

You can depend upon them in every emergency . . . . and, they in turn, can depend upon us . . . . for, they know from long experience, that RUSH orders received by us in the morning are shipped before night!

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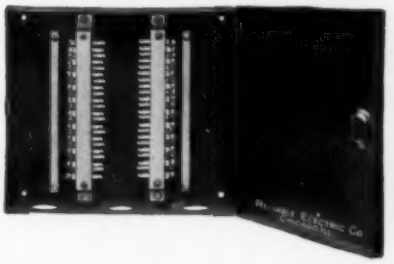

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have been tested under many adverse transmission conditions; poor lines; switchboards; etc., and the unfailing report is, "THE BEST WE HAVE HAD."

There is a reason: The LEICH handset transmitter talks well in any position and in addition, has a wide range of frequency response. The articulation is particularly good making "repeats" unnecessary.

The receiver is very sensitive and it also has a wide range of frequency response converting the electrical energy to sound with great fidelity.

The induction coil used is of the anti side tone type. The core is of low loss strip steel which increases the efficiency of the talking circuit.

The central battery telephones have the "booster" circuit in addition.

This equipment is housed in a black bakelite handset and base of remarkable beauty and symmetry.

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STROMBERG ANNOUNCES NEW HANDSET

IMPROVED service, increased revenue, and reduced installation and maintenance costs are l'sted by the Stromberg-Carlson Telephone Mfg. company as features of its new No. 1191 Handset, just announced. This instrument is a radical departure from present types in that ringer, induction coil and condenser — the apparatus usually contained in the desk set box — are mounted in the base, making it entirely self-contained and doing away with the installation of two units.

this latest Stromberg-Carlson product are low cord maintenance due to the use of two-conductor line cord; long, smooth, positive action hook switch; felt covered base, mechanically held securely in position; self-contained switch and terminal assembly held in place by two screws and a slot for the cord making it easy to remove switch assembly without threading the cord.

It is claimed that the new No. 1191 Handset gives operating companies the following advantages; exceptional eye

The new Stromberg-Carlson No. 1191 Handset just announced

It is considered that this new product is one of the finest engineering jobs ever to come from the Stromberg-Carlson laboratories.

The external appearance of the new handset is a distinct advance in design, being the work of Everett Worthington, nationally known stylist. Its compactness and beauty of line, together with its permanent, semi-gloss finish, make a universal appeal. It is pleasing to hold, maintaining nice balance in the hand. Furthermore, it is warm to the grasp due to the non-conductive properties of the phenol compound with which it is finished.

The No. 1191 Handset is equipped with a new Stromberg-Carlson receiver and with the company's popular Type X transmitter which improves articulation and which, in many cases, has been found to increase an operating company's area of operation with its present facilities approximately 40 per cent.

It is remarkably accessible for servicing, it is pointed out. Two screws remove the base cover, two additional screws remove the entire hook switch assembly and the transmitter and receiver are easily disassociated from handle and circuit without disturbing cord connections.

Other features of design listed for appeal necessary to stimulate replacement of desk sets, increased revenue through the higher rate paid for handset service, improvement in service because of superior articulation, reduced installation and removal costs because of its single unit construction, low maintenance cost because of operation of but one unit instead of two and through the use of two conductor cords instead of three, and extended area of operation because of its efficient design and the use of the Stromberg-Carlson Type X transmitter.

Ringing apparatus in the base of the new Stromberg-Carlson No. 1191 Handset

RAMBLEGRAPHS

By J. A. S.

(*Continued from page 26*)

In Harrisburg we looked up H. E. Bradley, who for many years has headed the telephone association in that state, and naturally it took some time to unload ourself of the many questions we wanted answers to from this gentleman. His report was little different, however, from that of other states where black ink was being substituted for red, and it was believed safe to throw away the red pen. He expressed the belief that a number of exchanges would be better served by private ownership and felt that syndicate companies might lend a receptive ear to persons who could qualify as good manager-owners for certain properties.

* * *

G. S. Herbert, general manager of the United Telephone and Electric company Pennsylvania properties, was next visited in our quest for information. This organization is a subsidiary of the United Telephone company of Abilene, Kan. Mr. Herbert said his companies would show a satisfactory report for the last six months of 1933, and with only one possible exception, would show a profit each month.

* * *

An advertiser in TELEPHONE ENGINEER writes us that he would like to have reprints from an article scheduled to appear in this publication, of which an advance showing was given him. Says he: "I know this publicity will give good coverage to the article, but there are a number of employees in each office I wish to have read it and knowing the way TELEPHONE ENGINEER is sought after I know some fellow will take it home and thus prevent others from seeing the article. I happen to know TELEPHONE ENGINEER is looked forward to each month and is not permitted to remain on the desk for any length of time, fearing it will disappear before all have read it who desire to do so."

* * *

Rambler is still "somewhere in the east," visiting old friends and meeting new ones. This is a trip he has contemplated for a number of years, but this winter was the first time in history that he felt he could leave his business for an indefinite period. Feeling that he has the best secretary to be had and an editor whose ambition has no restrictions and whose ability is unquestioned, Rambler realizes his dreams and feels that the information gathered will compensate him for the expenditure and that patrons of TELEPHONE ENGINEER will profit by the trip.

COMMUNICATIONS REPORT

(*Continued from page* 16)

member can visualize no other way for this body to act efficiently than by appointing commissions in every city and large town in the United States, replacing all State and municipal commissions, in order to investigate costs, services, and conditions there. Rates could never be regulated from Washington without such assistance. Such a procedure would appear to be an extravagant waste of Government funds unless we are sure it will result in benefit to the public. He does believe that machinery should be set up for the suggested Federal regulatory body, whereby if one or more State commissions complain of excessive interstate rates charged by the telephone monopoly, the regulatory body could compel hearing of all parties and render decisions as to what telephone rates were just. While it is true that the Interstate Commerce Commission does regulate rates within States to a certain extent, the regulation of telephone rates within States and cities would be a vastly more difficult proposition due to the many local and internal municipal problems encountered by communication companies, which have no bearing on railroad problems. Lacking further opportunity for study, he believes that rigid regulation of rates by a Federal regulatory body would be impossible unless accomplished at prohibitive expense. He believes that limited competition will accomplish the desired results in the telegraph field and that a Federal regulatory body empowered to have complaints of State commissions and render decisions as to rates of telephone companies will accomplish them in the two-way voice communication field.

From the legal, engineering, and public service standpoints it appears that the Government's regulation of private communications should be administered either by a communications commission of a quasi-judicial character, or placed directly under the jurisdiction of a Cabinet officer. In the event of the latter, there should be established a board of communication appeals whose function would be limited to issues involving equity. In either event, whether the regulatory administration is placed directly under a Cabinet officer or under a communications commission, all interested parties should have recourse to a Federal court in the District of Columbia for the purpose of appealing adverse decisions.

Inasmuch as there is a very close relationship, insofar as available ability of facilities is concerned, between the departments of the Government operating their communication systems, such as the Army, Navy, Coast Guard and the Airways Division, and the organizations, both domestic and international, which operate public service communication systems, it would seem advisable to establish a national communication advisory council consisting of representatives, appointed by the President from the various interested Government departments, including the Department of State. This National Advisory Council, together with the civil body responsible for the administration of civil communications, would be charged primarily with the formulation of policies. Where these policies involved, either directly or indirectly, the interests of nongovernment communication organizations holding license under the Government, or directly involved the interest of the public, the civil communications administration and the advisory council should be constituted as a communications committee of the whole to hold public hearings at which any person who could qualify as an interested party would be permitted to appear and give evidence as well as arguments.

Fourth. Under the heading of

(*Please turn to page* 31)

Registers Correct Working Temperature of Wiping Solder . . . . . .

ELIMINATES GUESSWORK
SAVES CABLEMAN'S TIME
INSURES BETTER JOINTS
REDUCES CABLE LEAKS
SAVES COMPANY MONEY

The Dillon Temperometer

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30 years of experience in designing and building equipment for terminating, distributing and protecting lead covered telephone cable is at your disposal.

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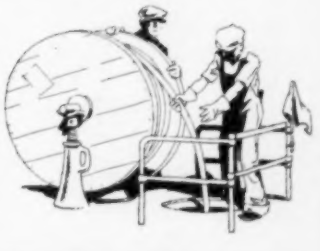

NRA, COMMUNICATION, TAXES DISCUSSED

A recent letter from the United States Independent Telephone Association to its members discusses several matters pending and under discussion at Washington in which telephone companies are directly interested.

Among other things the letter discusses the proposed communications legislation and the report on communications companies by an Interdepartmental Committee of which Secretary of Commerce Roper served as chairman and which is published in full on page 14 of this issue. The Association letter says:

"We suggest a careful reading of this report by all our companies. The early publicity given the proposed report indicated the Administration was favoring monopolies in the communication services. As you will see, this is not the gist of the final report; which, in a measure, advocates competition. The report recommends a Federal Commission to supervise communication companies. It is expected that bills providing for such a Commission will soon be introduced in the Senate and House of Representatives and hearings be held to obtain the viewpoint of the industries affected and to secure detailed information as to conditions in the industries.

"When similar legislation was proposed in 1930 in the 'Cousins Bill,' this Association opposed the measure because of its opinion that the telephone industry would be injured by being mixed with the radio industry, which was in a development stage. The Association officers will follow all these proposals, keep you advised, and endeavor to express the views of our members when the opportunity is offered.

"We do not expect immediate action, as the questions involved in the cable, radio and telegraph situations include foreign trade and international problems and Congress will, we think, move cautiously.

"Taxes: The tax problem is a serious one, especially state and local taxes. Federal taxes on telephone companies are not likely to be changed in the tax bill soon to be submitted to Congress by the Ways and Means Committee, except to the extent general corporation and personal income tax rates may be changed.

"We call your attention to one proposal that has been made that if adopted would have a serious effect on our companies. This is the proposal to reduce the amount allowed in operating expenses for depreciation. Liberal allowances made to some industries are under attack. We have been faced for several years with demands from officers of the Internal Revenue Bureau that our charges for Depreciation be lowered. Our rate has been forced down gradually—in some cases too far.

"Our industry must make a determined stand for sufficient depreciation to protect the investment (and thereby protect the property and service). The Association is constantly handling appeal cases for its members. We once more ask all our companies to advise with the Association officers on all income tax disputes and have the Association handle appeals and discussions with the authorities at Washington. This is a part of the Association's service to its members—no charge is made for it. No bad precedents should be set by individual company agreements. All companies should benefit from the precedents set in the cases handled by the Association. Cooperation will pay!

"Electrical Contractor's Code: For several months we have had discussions with the committee of contractors working on this code (which is a sub--code to the general Construction Code). We have objected to the definition in the code which defines a member of the industry (electrical contracting) as any one undertaking to erect, install, alter, repair service or maintain electrical wiring, devices, appliances or equipment.

"Surely the time has not arrived when a person (or corporation) employing men to work for him on his own work can be classified as a contractor! Were this definition to stand, all electrical work — including all telephone construction and maintenance — would come under the jurisdiction of the Electrical Contractor's Code, and control of hours, wages and conditions of employment would be taken from us. We have filed a protest with the NRA against this provision and definition.

"Telephone Code: No conferences have been held in regard to a code since December. In view of the extension of the Blue Eagle Agreements until April 30, the pressure to agree to a code was relaxed. The Deputy-Administrator handling the telephone code has been occupied with the electric power and light code. We will probably soon be called upon to confer again on a code for the telephone industry.

"We need certain information to back up our position that the Independent companies cannot comply with the Bell Code as applied to Class Five and Six Exchanges. In December, we sent out a questionnaire asking for information we need. The financial condition of our companies December 31—the station losses, the minimum wage being paid in Class Five Exchanges, and the exempt exchanges in Class Six. We have this week sent out a "hurry-up" letter to all who have not sent in their answers. We urge prompt compliance with our request.

Business Conditions: Our information is that conditions are improving. Loss of stations grew less each month last year and net gains have begun to appear in the January reports. We think the tide has definitely turned. Every company should be getting ready for Spring, with plans for business campaigns and for a careful overhauling of the plant for good service.

"Some say prices of materials are rising. Have you provided stocks of poles, wire, batteries, instruments, etc.? Do you need a new board? Let's all take stock! Are we equipped for traffic? Have we enough trained operators? Is the plant department well manned? Is commercial ready to get new business? Has the general manager laid out a well planned forward move of all his forces? Business is moving on. We should lead—not follow!"

RATE CUT ORDERED FOR GEORGIA COMPANIES

FLASH—Hearing begun on February 1 for the following eight Georgia telephone companies against application for rate reductions: Dalton Telephone company, Thomaston Telephone company, Consolidated Telephone company, Douglas Telephone company, Chatsworth Telephone company, Central Telephone company, Southeastern Telephone company, Georgia Continental Telephone company.

The Georgia Public Service Commission has ordered reductions ranging from 15 to 28 per cent in the rates of three telephone companies serving fifty cities and towns in Georgia.

The reduced rates were ordered for the Georgia Continental, serving northeast and southwest Georgia, the Southeastern Telephone company, serving a wide south-central clientele. The biggest cuts were made in Ashburn, Sycamore and McRae, while no changes were made at Coleman, Ellaville, Preston and Weston.

The Thomaston Telephone company, whose rates were cut in an order handed down by the commission in January, filed suit for injunction in the United States District Court for north Georgia, alleging that the order was confiscatory and not justified by the company's earnings. Judge E. Marvin Underwood took the petition under advisement. The petition, filed by Attorneys John H. McGeehee, Jr., and W. M. Dallas, also alleged the present state administration in Georgia "is hostile toward public utilities."

COMMUNICATIONS REPORT

(*Continued from page 29*)

"mergers," it is stated that existing law permits two or more telephone companies to consolidate with the approval of the Interstate Commerce Commission. The majority of the committee believe the same permission should be extended to all communication companies, while one member believes that "the same provisions should be extended to wire and cable telegraph companies and to radio telegraph companies in such manner that radio may have the opportunity to compete with wire and cable in both international and domestic telegraph fields."

Prior to the war, the British, through their ownership and control of a vast cable system extending to all parts of the world, had gained a leading place in the communication field. This leadership they used for their own commercial and political advantage and was of enormous assistance for this purpose. After the war, utilizing the newly developed radio art, the United States set up a purely American radio company in the United States, which seriously threatened British supremacy and obtained for the United States a similar leading position in the radio field with its accompanying commercial and political advantages.

One member of the committee believes that these advantages should be sacrified and that our purely American communication companies should not be permitted to slide into such a position that they would be amenable to the influence of foreign countries. For this reason, he believes that the merger of foreign-controlled communication services or facilities with American radio, cable, telephone and/or telephone companies, including holding companies, should be prohibited.

Although under the existing unrestricted competitive system, the United States does not have a fully adequate telegraph service, it must be remembered that competitive private enterprise has made our already extensive telegraph service possible. It is doubtful if monopoly cou'd have done as much. Prior to the entry of Postal Telegraph into the domestic wire telegraphy field, Western Union rates were much higher and their offices fewer. Competition has lowered the former and multiplied the latter. It has often been recommended that out of the existing overlapping facilities, a unified service be developed either by Government ownership or by private ownership under Government regulation. (Unrestricted competitive system has prevented our smaller towns and villages from having telegraph offices.) (France, for example, with a unified system and a population about one third that of our country, has more telegraph offices than the United States. Germany, with a population about one half that of the United States, has about one third more telegraph offices.) The waste and strife of unrestrained competition is well illustrated by the duplication of offices of the Western Union and Postal companies. In New York City there are approximately 300 Western Union offices and 10 Postal offices. Offices are similarly duplicated in all the larger cities. Each duplication means two sets of managers, messengers, clerks, operators, and equipment. However, the fact that two companies have offices and operating staffs in the same block is a decided advantage to the public, although not to the owners. This sort of competition exists in nearly all lines of business today. From the viewpoint of the public, rather than being an argument against competition, it is an argument for it. The majority members believe that the people pay a higher rate to maintain this unrestrained competition and state that under a unified service, rates cou'd be lowered and many small communities enjoy a telegraph office which they do not now have, the duplicate personnel eliminated by consolidation being absorbed by the service extended to regions now not served.

This paints a pleasant picture of the benefits of a merger, but the one member disbelieves these statements. Experience shows that competition produces lower rates. This he has already pointed out is the exact result of the entry of Postal Telegraph into the domestic telegraph field. Since the advent of radio in competition with cables, the same reduction of rates has ensued. To consolidate these services would set up a powerful wire radio and cable monopoly, susceptible to foreign influence, and necessitating the setting up of extensive, expensive, and complicated Government machinery to regulate. Such a monopoly would be difficult, if not impossible, to control, and would be capable of swaying the opinion of the people and through them, determining the policies of the Government itself. The service given by the wire monopoly of France is very poor. One compelling reason which dictates a record monopoly in those countries is the necessity for immediate and rapid mobilization in case of war. Those countries are so situated adjacent to each other and their relations are such that they must be instantly prepared for a major war. A few hours' delay in a mobilization order may have terrific consequences. The Navy is the first line of defense for this country. Mobilization of land forces can proceed at a slower pace without disaster. France and Germany must rely for immediate action at the outbreak of war on their domestic wire systems. The United States must rely on her radio communication with the fleet and merchant marine.

The British merger of her cable and radio companies has not been a financial success. More serious than this, the radio companies which joined the merger appear to have suffered disproportionately due to the fact that the cable interests have been protected to the disadvantage of radio. The technical development of radio in the United States, where it is not merged with cable and wire interests, stands ahead of that of Great Britain and to sacrifice this position would be a serious mistake.

Under the provisions of existing law two or more telephone companies wishing to consolidate are permitted to make such application to the existing regulatory body, now the Interstate Commerce Commission. The law prescribes ample safeguards whereby all interested parties may be heard at a public hearing, after which the regulatory body may issue a permit or may refuse the same.

(The committee believes the same provisions should be extended to all communication companies.)

One member of the committee believes that the preceding sentence should be deleted from the report and that the following should be substituted: "The committee believes the same provisions should be extended to wire and cable telegraph companies and to radio-telegraph companies in such manner that radio may have the opportunity to compete with wire and cable in both the international and domestic telegraph fields."

Fifth. Under the heading of "rates," members of the committee, with one exception, say the subject of rates is one properly for consideration and control by the recommended regulatory body. One member makes an extended argument for the principle of limited competition.

(The subject of rates is one properly for consideration and control by the recommended regulatory body.)

One member is not in agreement with this statement for the reasons put forth in his discussion of "Regulations." If the principle of limited competition is adopted, as he recommends, in the field of telegraphy, this principle will pro-

(*Please turn to page 36*)

NEW ENGLAND ANSWERS UNION OFFICIAL

FLASH — Bills sponsored by W. C. Marshall of Watertown, Mass., providing for investigating the consolidation of New England T. & T. company with various others and prohibiting telephone and telegraph companies from transferring franchises or leasing properties without legislative sanction, received unfavorable reports in committee, and the findings have been sustained by Massachusetts House of Representatives.

At a hearing before the Massachusetts Legislative Committee on power and light were heard echoes of the telephone rate case, recently completed before the Public Utilities Commission after three years of intermittent sessions.

Wycliffe C. Marshall, counsel for the Boston Central Labor Union, which petitioned for a reduction in telephone rates, urged the Legislative committee to approve four proposals for regulatory telephone legis'ation. Opposition was voiced by Charles E. Pierce, vice president of the New England Telephone and Telegraph company.

Mr. Marshall spoke on his bill to require that telephone rates and charges be based on costs of each class of service. He said the law he proposed is now applicable to municipal lighting plants. "The greater the monopo'y the greater the need for strict regulation for the protection of the public," Mr. Marshall said.

Mr. Pierce said "It would be impossible to base rates on costs of each class of service and even if it were possible it would be unwise. It is a physical impossibility because costs are so intermingled. If Mr. Marshall's scheme were practical it would make rates in some instances prohibitive."

ORDERS RATE CUTS

The Standard Telephone and Telegraph company, the Andalusia Telephone company and the Georgiana Telephone company have been ordered by the Alabama Public Service Commission to reduce their service connection charges, these reductions conforming to reductions recently made by the Commission, in rates and charges of the Southern Bell Telephone and Telegraph company in that state.

DECLARES DIVIDEND

The Platteville, Rewey & Ellenboro Telephone company, Platteville, Wis., declared a dividend of $10 per share. This action was greeted with much enthusiasm by stockholders at the annual meeting.

IMPROVEMENTS IN SERVICE MADE

The management of the Buffalo Valley Telephone company, Lewisburg, Pa., made an announcement recently that it will install a new telephone system for the use of its subscribers on the Lewisburg and Mifflinburg exchanges this year.

* * *

A carload of telephone poles has been delivered by the Missouri-Pacific Railroad company at Bunceton, Mo., for the Texas-Empire Pipe Line company. The poles are to be used in the construction of a telephone system between Bunceton and Pleasant Green. The Texas Empire company own and operate their own telephone lines.

* * *

The Northwestern Illinois Telephone company has completed work of installing an automatic switchboard in the Hanover, Ill., office.

* * *

Announcement was made recently by J. H. Keating, manager of the Kenosha district of the Wisconsin Telephone company, that the company had completed the work of rearrangeemnt of its rural lines in the areas affected by the widening of State Highway 42 south of the city of Kenosha.

The project involved an expenditure in excess of $5,000 and included the moving of 148 poles on State Highway 42 between the south limits of the city and the state line. In addition 45 poles were placed and about three miles of additional wire strung.

Additional expenditure is also being made near the north city limits of Kenosha in connection with the new lakeshore drive which is being constructed there.

* * *

The remodeling of the Case building purchased by the United Telephone company at Mankato, Kans., is now taking form. The exterior construction has advanced far enough to give a good idea how it will look when it is completed. Structural changes include a sloping decorative roof at the front, a complete new door and window arrangement and stone instead of metal along the corners.

Merle Roberson is in charge of the construction on the new building. Up to this time 25 local men have been employed and the payroll for these men has amounted to a neat sum. Additional cable has been installed to make the cut-over from the old office to the new building.

* * *

The Wabash (Ind.) Valley Telephone company has just comp'eted the installation of a dial telephone system at its State Line City exchange.

* * *

In addition to ordinary maintenance work, such as was accomplished during 1933, a reconstruction project involving an expenditure of approximately $15,000 in Waterloo, Ia., has been approved for 1934, and will be started soon by Northwestern Bell Telephone company.

This project involves replacement of transmission facilities in the city area bounded by Logan avenue, Barclay, Adams and Lester streets, and wi'l include also substitution of cables for wire lines on Newell street east of Mobile street, and on Burton avenue north of Parker street.

Another project which will be carried out when service demands make it necessary, may be started late in the year 1934. It would involve laying of a new full-size cable of 1,800 pairs of wires to better service for patrons in the west residential district. The cable would commence at the central office and extend in diminishing size to the vicinity of Baltimore or Denver streets. This cable, with associated rearrangements and work, would involve an expenditure of about $20,000.

* * *

The Southern Appalachian Telephone company is replacing the magneto telephone system to a common battery system at Burnsville, N. C. The exchange that has been in use at Burnsville will be installed in Leicester to replace the exchange there which was recently destroyed by fire.

Jack Smith, of Asheville, one of the owners of the Southern Appalachian Telephone company, and C. V. Valentine, of Ashevil'e, plant superintendent, are supervising the work.

NEW IOWA LAW PASSED

A bill, which passed both houses of the Iowa General Assemb'y, requires long distance or local companies to furnish equal facilities to any telephone exchange. A local exchange, under the terms of the act, is one operating under a franchise granted by the city in which it is located. Governor Herring signed the bill December 30, 1933.

PROMOTED

Appointment of Glenn H. Stephens as commercial manager of the Mountain States Telephone & Telegraph company to succeed Dean D. Clark, who has been promoted to assistant to the president, was announced by Frederick H. Reid, president.

ULTRA MODERN

250 ROOMS AND APARTMENTS FOR A DAY –A WEEK–OR A YEAR

EXCELLENT TRANSPORTATION

•

BARBER SHOP–COMMISSARY – BEAUTY SALON AND COFFEE SHOP

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Comfort with friendly surroundings and skilled service.

RATES
SINGLE ROOM FROM $2.50
DOUBLE ROOM FROM $3.50
SUITE (Suitable for Four)
From $5.00 to $10.00

ALL BRIGHT OUTSIDE ROOMS WITH COMFORTABLE BEDS . .

•

Bedroom suites with double in-a-dor beds in the living room, and one room apartments with either twin or double in-a-dor beds.

Electric refrigeration, filtered water, forced ventilation and concealed beds.

ONE HALF BLOCK SOUTH OF DIVERSEY PARKWAY

Lincoln Park Arms

2738 PINE GROVE AVE • CHICAGO, ILL.

GOOD CABLE SPLICING PAY DIVIDENDS

(*Continued from page* 12)

is caused by the vibration of the reed in the heart of the instrument. This is a normal condition and does not impare the efficiency of the temperometer.

When and How to Stir Solder

It is always a good plan to heat the ladle before dipping it into the pot of solder or the hot metal may splutter and fly over the hands and arms of the workmen. After the metal is heated it should always be stirred thoroughly before starting to wipe the joint and any dross which comes to the top should be skimmed off. Stirring of heated metal should thoroughly mix the tin with the lead which is so necessary to produce an airtight cable joint. When an instrument is not provided to accurately indicate the temperature this stirring may produce the reverse result for laboratory tests have proved that stirring wiping solder at a low temperature separates the tin and lead and the tin comes to the top.

Tests have also proved that stirring the solder at the higher temperatures does thoroughly mix the tin and lead as desired. When using the Dillon Temperometer the solder should not be stirred when it registers below point 3 on the dial. In reality the Temperometer serves a dual purpose, that of indicating the temperature for stirring the solder and the correct temperature for wiping the joint.

Stirred Certain Way

While most everyone is familiar with the fact that heated wiping solder should be stirred before using, few know that it should be stirred just a certain way for perfect results. It has been found that the ladle should be immersed in the metal and revolved by turning the handle in a circular motion. The solder should never be agitated by a whipping motion of the ladle as this breaks the skin on top of the solder and causes oxidization. This is especially harmful when the solder is at a high temperature, in which case the tin oxidizes faster than the lead, which results in reducing the tin and an unbalance of the correct percentage of both metals. Wiping solder should never be heated to 900 degrees F, or above, as this also destroys a part of the tin content.

Making use of the Temperometer in the manner indicated will insure that the tin and lead is properly mixed and that none of the tin content is lost through overheating. When one is assured of these two important things, then a cable splicer with even ordinary ability can be reasonably sure that he will never have a defective joint, which is always good for his peace of mind and disposition in general.

Good Splicing Pays Dividends

Some splicers may be of the opinion that such precise testing of metal is not justified and boast of their slipshod methods and claim that they have had no more failures than have the most careful of splicers. This is perhaps true for the methods of the most careful and best cable splicers heretofore have not been good enough for there has not been an accurate method of testing the temperature of wiping solder prior to the appearance of the Temperometer.

When a splicer has no accurate means of determining when his metal reaches the correct temperature he must guess and no one has ever been able to guess right on anything everytime and in this case cable failures have been the result. The loss in revenue resulting from the failure of a busy cable because of porous metal may amount to a considerable sum in addition to the actual cost of necessary labor and material to make repairs. Added to this the good will of the telephone company is never improved by frequent cable failures and good will many times means more than mere dollars and cents.

This all tends to indicate that a splicer cannot be too careful and that even the smallest details should never be neglected. The metal should be tested and heated to the exact temperature when making each splice. There is no excuse these days for guesswork for the Temperometer tells absolutely the correct temperature for stirring the metal and when to start wiping the joint. What more should even a cable splicer desire?

S. W. BELL UPHELD

The Southwestern Bell Telephone company has been upheld by Circuit Judge Joyce at Belleville, Ill., in its refusal to pay taxes on a $447,355 increase in its St. Clair County, Mo., property assessment, imposed by the county's board of review in 1931.

The ruling saves the company $20,946.65 in taxes for 1931. By an agreement based on the outcome of the suit, the company also saves a similar amount in 1932 taxes.

BUYS EXCHANGE

John Weatherby of New Hebron, Miss., has purchased the telephone company at Sims, Ind.

CUT APPARATUS TROUBLES

(*Continued from page* 18)

ing, contacts that receive this final treatment with the polishing blade will remain satisfactory longer than those contacts which do not receive the benefit of the polishing operation. Intelligent use of contact cleaning and burnishing and polishing tools will do much to reduce telephone apparatus troubles.

Important Step

This final operation of smoothing out the minute scratches caused by the cleaning tool blade is an important step and it is suggested for use in cases where trouble is being experienced with older methods of cleaning and polishing contacts.

After contacts have been put back into first-class shape, special efforts should be directed to correct the situation which caused the trouble. Especially should steps be taken to retard gathering of dust deposits. The switchboard should be given a thorough cleaning with a vacuum cleaner at regular intervals. To keep down dust in between these periods the switchboard room should be carefully swept and cleaned out each day. Avoid creating dust when cleaning. Windows, woodwork, furniture and fixtures should be washed and dusted with suitable rags at regular intervals. In other words, paying close attention to simple rules of cleanliness will often clear up troublesome cases of dirty apparatus contacts and result in reducing the cost of maintenance of equipment as well as providing a better grade of telephone service at least cost.

103 COMPANIES' REPORT

Earnings of 103 telephone companies as reported to the Interstate Commerce Commission for November and 11 months compare as follows:

	1933	1932
November gross	$79,242,213	$80,651,161
Net operating income	15,016,712	14,430,971
11 months gross	871,291,337	951,844,944
Net operating income	168,228,063	176,397,999

DIVIDEND DECLARED

The Holbrook (Nebr.) Central Telephone Association declared a dividend of $5.00 per share with the understanding that it was to be applied on account where the share holders owes the company. J. C. Cooper was elected president and George Sayer was elected vice-president.

DIRECTORY ADS YOUR REVENUE

(*Continued from page* 19)

Telephone directories, properly developed from an advertising standpoint, especially where there is a classified section, should help a telephone company retain subscribers, for such directories are of considerable help to the public at large.

It is necessary that the advertising copy be carefully prepared and well arranged in order to get the full advantage of the space used. Many advertisers do not know what to say in their space, and leave it largely up to the advertising salesman to prepare their copy, so it is necessary to understand how to properly arrange copy.

One of the large advertising sales agencies reported sometime ago that the total number of advertisers in the combined telephone directories it handles is now the largest it has ever been due to the fact that more attention has been paid during the past few years to selling the small prospects as well as the large ones, although the average amount of each sale is considerably smaller than three years ago. This is a tribute to the value of telephone directory advertising.

It is probably not possible to make a profit from telephone directory advertising, in all sections of this country, because some territories have been going through such difficult times. On the other hand there are many telephone companies which have not paid a sufficient amount of attention to this by-product, and these companies by either arranging with an advertising sales organization or by organizing and training their own sales force, should be in position to either cut down their present directory losses or increase their net returns, as the case may be.

Today the telephone company is directing its efforts to reduce expenses everywhere possible. Telephone directory advertising gives them one opportunity to make a substantial reduction in the publication and distribution of their directories. For those companies without a classified section in their directories, it is recommended that they immediately investigate the approximate directory advertising revenue that could be gained in their communities and if it appears favorable that they immediately lay plans to sell advertising in their directories.

For those companies that have been unsuccessful in selling directory advertising themselves, it is urged that they consult a telephone directory advertising organization and make arrangements for them to take over the work of selling their advertising.

The revenue obtained from this type of advertising is too great to be overlooked and in this day of diminished income, telephone managers would be wise in considering this method to help them return to or remain on the right side of the ledger. TELEPHONE ENGINEER will gladly furnish further information on directory advertising and refer them to advertising sales organizations specializing in this work.

DATA FOR RATING CIRCUITS

(*Continued from page* 23)

it may be rated in terms of the existing working reference system, in which case the overall rating of any complete circuit which can be rated in terms of both systems will be approximately the same in terms of either reference system.

Schematic Description

The working reference system which has been adopted is shown schematically in Fig. 1. It consists of two representative subscriber sets on three-mile 22-gauge cable loops connected, through repeating coils supplying 24-volt talking battery, to a trunk having a pure resistance characteristic impedance and an adjustable attenuation. The present working reference trunk has a very high attenuation above 3000 cycles to simulate loaded lines. Below this frequency the attenuation is independent of frequency and can be varied distortionlessly so that differences in effective ratings can be expressed in terms of differences in trunk attenuation. It has a 600-ohm characteristic impedance. The circuit noise in the receiver of the working reference system is that distribution of noise which normally will be found in relatively quiet offices and in relatively noisy residences. The average magnitude of noise in such locations relative to other familiar conditions is shown by Fig. 2.

Any convenient rating may be assigned to the working reference system. The Standard Cable Reference System with a trunk of zero length, which was used for specifying volume losses, was the best circuit commercially available at the time it was adopted and was given a rating of zero. This reference point was continued essentially unchanged long after the time when this significance of the zero had been lost by the introduction of improved facilities, and after the Standard Reference System was replaced by the Master Reference System.[2] Because of the long use of this reference point both for rating circuits and for specifying standards of transmission, the numerical values of the volume equivalents of the circuit and the volume losses of the component parts, expressed by this system, have become associated with transmission performance and it is considered desirable, at least for the present, to retain this significance of the numbers as far as possible with the new method of describing circuit characteristics.

This has been accomplished, first, by selecting typical limiting conditions for the working reference system, and second, by making the effective equivalent of this system numerically equal to the volume equivalent obtained from the volume loss data. This numerical equality holds for the working reference system with any adjustment of the line provided that the trunk contains enough attenuation to prevent material effects due to the interaction between the terminals. The normal adjustment is that for which the working reference system has an 18 db volume equivalent. The effective equivalent of any other complete telephone circuit is also equal to 18 db if it provides the same grade of service as the normal adjustment of the working reference system.

(To Be Continued in March)

2. "The Transmission Unit and Telephone Transmission Reference System," W. H. Martin, B. S. T. J., Vol. III, p. 400. "Master Reference System for Telephone Transmission," W. H. Martin and C. H. G. Gray, B. S. T. J., Vol. VIII, p. 536.

COMMISSION ORDERS SERVICE CHANGES

Southern California Telephone company, chief subsidiary of Pacific Telephone & Telegraph company, has been ordered by the California Railroad Commission to institute important service changes within six months that can be estimated adversely to affect the company's revenue in excess of $400,000 a year.

The order, written by Commissioner Leon O. Whitsell, denied the company's request for an indefinite postponement, and, in lesser degree, was directed against seven other outlying properties including Associated Telephone company, Ltd., Downey Home Telephone & Telegraph company, Monrovia Telephone & Telegraph company, San Fernando Telephone & Telegraph company, Sierra Madre Telephone & Telegraph company, Sunland Rural Telephone company and Whittier Home Telephone and Telegraph company.

In ordering the changes upon a plan devised by its engineer, E. W. Watson, the commission estimated that Southern California Telephone's operating revenue would be reduced $238,000 annually, its expenses increased $142,000 annually and that $700,000 of capital costs would be entailed.

CHURCHILL MAKES AIR CONDITIONED BOOTH

Air conditioning is in the air, so to speak. Every spot in which people spend any time is considered a place to be air conditioned; homes, public buildings, boats, trains, airplanes and even clothes closets in our homes now have mechanically treated air.

It is only logical that telephone booths, those very necessary conveniences of every public building, should come in for their share of attention in this respect.

One of the ways in which this is to be done is shown by the Churchill Cabinet company which has devised a system of ventilation which exhausts air from the booth and provides a positive supply of fresh air.

Unique in detail and adapted for use in practically every kind of booth regardless of shape or size, the new system, while providing positive ventilation, of which the occupant is definitely conscious, does not subject the user to a draft; and in addition expells heat radiated by the electric light, provided for illumination of the booth. Smoke and odors are expelled in like manner.

The light and ventilator may be connected in parallel and controlled by a door switch so that when the door is opened the light is extinguished and the ventilator is shut off.

It may also be utilized in telephone booths which do not employ a door control and if desired may be controlled by hand switches or operated continuously.

Another interesting feature provides for a slight opening of the door by the occupant of the booth to permit conversation with persons on the exterior without turning off the electric light or ventilator.

This new product of the Churchill Cabinet company is designed to do much to add to general comfort and convenience of the public.

COMMUNICATIONS REPORT

(*Continued from page* 31)

vide an automatic rate regulation in itself and he foresees little need of the regulatory body concerning itself with the rates of telegraph companies. Lacking detailed data concerning the rates of the telephone company, he is unable at present to see how rate regulation of their services can be accomplished to any appreciable extent by a government regulatory body without prohibitive expenditures, except in the manner which he has indicated in his discussion under "Regulation", suggesting certain improvements to be made in the existing Federal Government machinery for administering communications.

In view of the foregoing, one member recommends that the following points be adopted in the institution of a national communications policy for the United States Government:

(1) In the interest of service to the public, fair rates, development of the art of telecommunications and governmental economy, the policy of the Government should be to require and, at the same time, limit competition in the telegraph communication field between that number of companies which can operate at a reasonable profit.

(2) No policy, such as permitting the merger of radio and cable or wire companies, should be adopted, which would tend to retard the development or expansion of any phase of the art of telecommunications, either in the domestic or international field. Positive action should be taken to insure the rapid development and application of radiotelegraphy.

(3) The communication companies of our country, including holding companies, should be privately owned by American stockholders, operated and controlled by American directors, officials, and personnel.

(4) Encouragement should be given to American-owned communication enterprise in foreign countries which is independent of radio companies licensed to own or/and operate radio facilities within the United States and its possessions; on the other hand the merger of foreign-controlled, or partly foreign-controlled, communication services or facilities with those of American communication companies, including holding companies, should be prohibited.

(5) Provision should be made for the permanent assignment of such radio frequencies and other communication facilities as are required for national defense and other authorized Government agencies and any policy upon which the Government decides should fully meet the requirements of national defense.

There stand out in the study the following:

(1) Continuation of private ownership and operation of communications;

(2) Government regulation of such ownership and operation by one agency, whether an independent commission or a bureau in an executive department;

(3) Some further extension of permission to merge existing companies under the supervision of a regulatory body; and

(4) A disagreement as to the extent of the elimination of competition.

BELL CUTS STATION LOSS IN 1933

During the first eight months of 1933 there was a net loss of 715,000 Bell System telephones but during each of the last four months there was a gain totaling 85,000, leaving a net loss of 630,000 for the year as compared with a net loss of 1,650,000 during 1932. The number of telephones in service at the end of the year was about 13,160,000, which is 16 per cent below the maximum development reached in 1930.

The total number of toll and long distance calls handled during the year 1933 was about 9 per cent less than for 1932. The last half of 1933, however, showed an improvement, total toll and long distance calls being only about 3 per cent under those for the corresponding period in 1932.

While final figures as to earnings for the year 1933 are not yet available, preliminary data indicate that, treating the system as a whole and including the Western Elecric company, the earnings on American Telephone and Telegraph company stock were approximately $5.30 per share as compared with $5.96 per share in 1932.

MOUNTAIN STATES CO. FIGHTS $2 TAX

Suit to test the constitutionality of the act of the recent special Montana legislative session imposing a $2 tax on telephone instruments has been launched in federal court by the Mountain States Telephone and Telegraph company.

As enacted, the measure was expected to produce $60,000, of which 95 per cent was to be diverted to the emergency relief fund, the balance to to be used for administration. The act amended a law created by the regular session by increasing from $1 to $2 the tax on residence telephones costing $2 or more per month and on business instruments on which the monthly rate is $4 or more.

In attacking the validity of the legislative act the company contended it violates the interstate commerce clause of the federal constitution, that the company was denied equal protection by reasons of exceptions permitted and that the penalties imposed are severe.

ORDERS KELLOGG BOARD

The Wadesville Citizens Telephone company, Parkersburg, West Virginia, recently ordered a No. 50 Kellogg magneto switchboard. The company's old equipment was completely worn out, so to give subscribers modern service, the company purchased a new board.

Where-to-Buy Section

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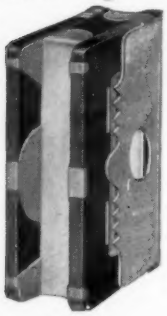
Neon Lightning Arrester Units



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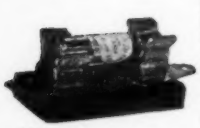

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MAY TAKE OHIO RATES TO HIGHER COURT

The Ohio Bell Telephone company is expected to take an appeal to the courts, probably a federal court, from the decision of the Ohio Utilities commission, in the ten-year-old telephone rate case. It affects 180 municipalities, including most of the Eastern Ohio riverfront towns.

Unless the case is appealed to the courts within 90 days the telephone company must rebate to its subscribers approximately thirteen million dollars in excess rates collected since 1924 and reduce its rates to conform with a fair return on its property, prescribed by the commission.

It was reliably reported that the appeal would be taken to the federal courts, alleging that the utilities commission's finding constituted confiscation of property.

Another avenue of appeal lay with the state supreme court, should counsel for the telephone company decide to contend, that the decision was in violation of state laws.

Although the commission ordered the company to reduce its service rates on intrastate basis, it made no effort to dictate new rates in any locality, except to specify that they should not net the company in excess of the prescribed fair rate of return of 7 per cent as of 1925.

NEW COMPANIES ARE FORMED

A new telephone company was organized recently at Amiret, Minn., with P. Trout as president.

The Fairview-Lincoln Telephone company has been incorporated and will have its principal office and place of business in the city of Corning, Adams County, Iowa.

New articles of incorporation have been filed for the Gas Belt Telephone company of Okobojo, S. D., with a capital of $7,500. Incorporators are George Lumley, Bessie Lumley, J. H. Gropengieser, Ed Young, Charles B. Floyd.

Articles of incorporation have been filed for the Pleasant View Telephone company, of Hitchcock, S. D., with a capital of $10,000. Incorporators are John Marshall, W. G. Weiting, H. D. Sweeten.

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